Issue 84 • 16 June 1990 • 58p

NEW COMPUTER EXPRESS

BRITAIN'S BIGGEST SELLING COMPUTER WEEKLY

WIN £500 Worth of Prizes only in the EXPRESS SUMMER GIVE-AWAY Page 58

AMIGA

- AMOS update
- WordPerfect 5.1
- Klax reviewed

ST

- 90s show report
- Dragon's Lair tested
- TT supplies arrive

PC

- LocoScript review
- Corporate piracy poll
- World Cup Soccer '90

CPC

- Bloodwych arrives
- Complete B cheats

ATARI XE

- Soccer and cycling

Specialist Columns for: BBC•C64•MSX•PCW•ARC QL•SAM•SPECTRUM•PD

CD-ST PLANS SLIP OUT

EXCLUSIVE

Atari's competitor to Commodore's CDTV will launch next year, says Tramiel

page 3

PLUS – HOT FROM THE STATES...

- PC Engine-compatible colour hand-held
- Commodore launches portable PC

See pages 2 and 3 for all the Chicago CES show news

STOP PRESS

COUPE CRISIS

Miles Gordon Technology calls in receiver manager in attempt to save ailing company – see page 7

WHICH GAMES MACHINE IS BEST?

page 48

Express guide to the pick of the consoles

A GIANT LEAP FOR THE PC WIMPS?

page 46

Microsoft Windows 3 put through its paces

9 770957 064004 24

CONTENTS

FEATURES

WINDOW CLEANING 46
The latest WIMP system for the PC breaks new ground

THE DAY OF THE CONSOLES 49
Comprehensive round-up of the best in games console bargains

LOCOSCRIPT PC ARRIVES 53
A full test of the long-awaited PCW word processor conversion

REGULARS

NEWS 2-6

COMMENT/ARCHIVE 7

SUBSCRIPTION OFFER 48

COMPETITION 58
PC business software to be won

TECH TIPS 54
New look for our top advice column

LETTERS 56

SHOPPING EXPRESS

BUYERS' GUIDE 19
ST Essentials

READER ADS 26

EXPRESS JOBS 36

EXPRESS SALES 38

PUBLIC DOMAIN 42

YOUR MACHINE

AMSTRAD CPC 9
SPECTRUM 10
SAM COUPE 10
AMSTRAD PCW 10
MSX 10
BBC MICRO 11
COMMODORE 64 11
SINCLAIR QL 11
ARCHIMEDES 11
AMIGA 13
PC COMPATIBLES 14
ATARI ST 16

Tiny NEC games console can show TV pictures

COLOUR HAND-HELD PC ENGINE ARRIVES

A colour hand-held games console was launched in the States last week by NEC. Called the TurboExpress, it is the long-awaited hand-held PC Engine.

Unfortunately, as with the full-size PC Engine, there are no plans to release the machine in the UK.

The TurboExpress, previewed at Chicago's CES last week, measures 4.3 x 7.3 x 1.8 inches, weighs 1.2lb, and is capable of displaying 256 colours on the screen while featuring six-channel sound. The screen is back-lit, high-resolution active-matrix LCD.

Crucially, the Express runs exactly the same credit card software as the TurboGrafx-16 (a variant on the PC Engine). There are currently 31 titles available for Express with another 20 being promised before Christmas.

Six AA batteries will run the Express for four to six hours. The basic unit will retail for $249 with an optional TV tuner available at $79, turning the machine into a full colour portable television.

Other accessories planned include a communication link for two-player games, an AC adapter, a battery pack and a car cigarette lighter adapter.

• For a full round up of currently available hand-helds and consoles, turn to page 49.

• Right: The amazing TurboExpress features an optional TV tuner.

New look and price cut for Sega Master System

Sega has previewed two new games consoles – but neither will reach the UK for at least another year.

The Master System II was shown for the first time at Chicago's CES. It is quite simply the original Master System in a new, sleeker and sexier casing with one joystick instead of two.

So what's all the fuss? The difference lies in the price, which has been cut from $79 to $59.

Sadly however, Sega's UK distributor has already stated that the upgraded 8-bit console will not be available until 1991 at the earliest, with 1992 more likely.

It seems that Sega's Japanese bosses have decided that while the machine may be seen as a little jaded in the US, it is still relatively new to the UK and hence performing just fine as it is.

Meanwhile Sega's hand-held, the Gamegear (*Express passim*), goes on show at the Japanese Toy Fair this week. It will not, however, be released in the UK until the autumn of 1991 at the earliest.

• Sega's updated Master System II has a new look at a lower price – but it won't be imported into this country for some time.

Neural networks on the nose

A group of researchers at Warwick University has developed an electronic nose based on a computerised neural network.

It has already been trained to identify five different types of alcohol – a feat beyond all but the most highly trained human proboscises.

The neural network mimics the way nerve cells process information and uses 12 sensors which vary in resistance with the concentration of gases – or in this case the fumes of methanol, ethanol, butanol and two isomers of propanol.

The output from each sensor goes to a neurone which multiplies the signals received by a predefined weighting factor, and then passes the sum of these results to the next layer. There are 12 sensors and three layers of neurones, and the system can distinguish each smell in a few seconds.

A major advantage of the neural network approach is its fault tolerance. Unlike statistical sampling techniques, even if a few neurones or sensors malfunction the system will produce roughly the same output and results.

The group hopes to develop the system for food freshness testing.

Atari US plans 32-bit console

Atari president Sam Tramiel last week revealed plans for Atari's 'second generation' of consoles.

At the moment its VCS range of machines is losing out to Nintendo and Sega, but Tramiel stated that "16-bit and 32-bit, super graphics advanced technology desktop video game machines" will be available in "either 1991 or 1992".

The forthcoming 16-bit machine will not, however, be the rumoured ST-based console, to which Sam Tramiel is still offering a firm no comment.

EXCLUSIVE: Atari joins the CD home entertainment system race

ST-BASED CD-ROM MACHINE: ALL SET FOR 1991 LAUNCH

An all-in-one CD-ST will be launched next year, Atari's president Sam Tramiel revealed last week. Additionally, external ST CD drives will finally be officially launched later this year, *writes Dave Roberts.*

The CD-ST will be pitched firmly against Commodore's CDTV as the complete home entertainment machine. There is no firm indication of a price for the machine, but when asked if he would try and undercut Commodore Tramiel simply offered: "We will be very competitive".

Atari has actually had the capability to produce such a machine for a long time, with thousands of CD drives designed for use with the ST gathering dust in Atari warehouses throughout the world for the last few years.

When Atari discussed the add-on ST drive last year, a price tag of $499 was mentioned. Last week Tramiel said: "I am looking to get them out at around $299."

He added that the drive would receive a simultaneous UK launch with equally competitive pricing.

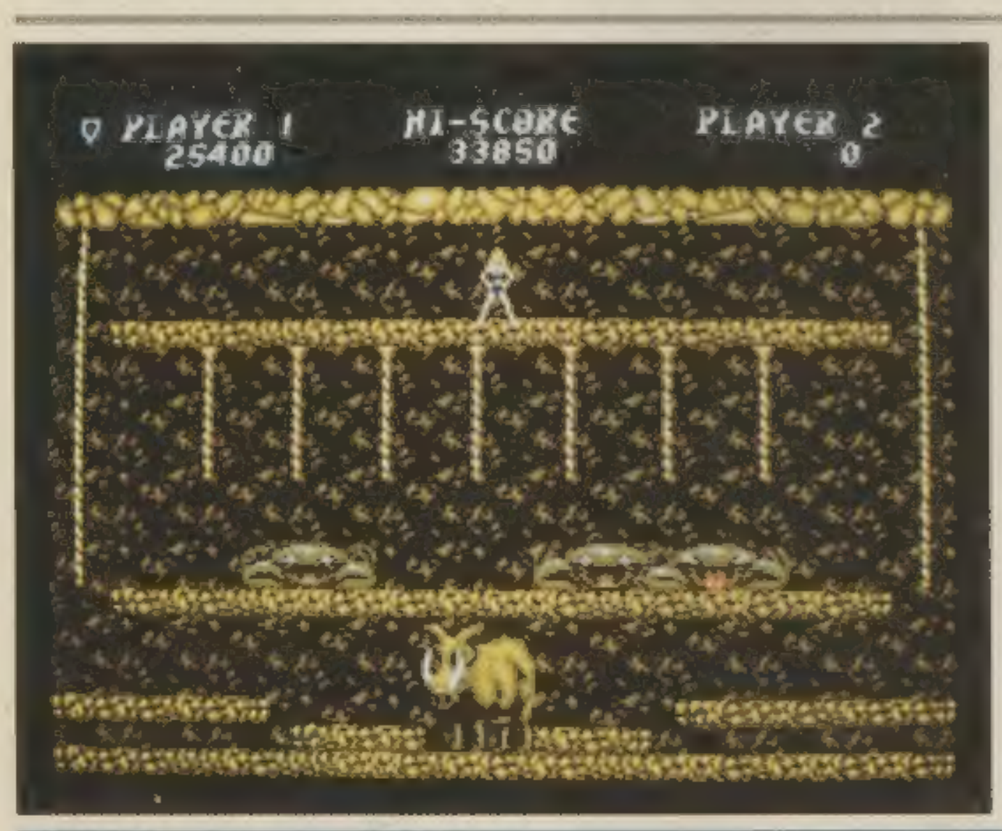
It seems that the huge gap between Atari's initial enthusiasm for CD technology and its announcement of a CD-ST was caused by a severe lack of interest from software publishers.

Currently, the majority of the CDs being worked on are "huge database, educational-type products" with little involvement from leisure firms.

Tramiel claimed that software houses are currently working on CD-ST titles, but that so far only two are finished and that he would be happy to launch with as few as five decent titles.

Interestingly, Tramiel's revelations came in the same week as UK boss Bob Gleadow made some rather dismissive comments on CD technology at the Atari show in London (see Atari Show report on page 5).

• First pictures of the Commodore CDTV combined CD and Amiga. As revealed in last week's Express, Commodore is pitching the machine at the same home multimedia market as the ST-CD.



Take on the twelve tasks

***Yolanda*, a game which casts you as Hercules' offspring, promises to be the fastest and most difficult platform game ever, according to publisher Millennium.**

You play the part of the accursed Yolanda and the scenario is loosely based around the 12 tasks of Hercules.

Fifty levels, twelve tasks and a three-level trainer for beginners make this one worth waiting until the end of July for.

Prices will be £19.99 for the ST and Amiga.

• Left: Play Hercules' little one in Yolanda.

Elvis lives on in a game

Is Elvis really dead? That is the question behind a new adventure spoof, *Search for the King*.

The game, which hails from US firm Accolade, never actually mentions Presley, but the missing singer of the game is constantly referred to as 'The King'.

Like Elvis, The King of *Search for the King* inspires a worldwide fanatical following, while also possessing a penchant for flared, white suits with gold trimming and collars the size of plane wings. It is not known if the game includes any drug taking.

Search for the King should hit Britain this summer, initially with a version for the IBM PC and compatibles only, with Amiga and ST versions to follow later in the year.

Commodore goes for a top-end portable

Commodore will enter the portable PC market in the US later this year with the LT286.

A definite UK launch date has not yet been fixed but it looks certain that the machine will arrive in Britain in the next 12 months.

The LT is in the familiar clamshell design and, as the name implies, uses a 286 processor. It has 1Mb of RAM expandable to 3Mb or 5Mb, 128K of ROM and runs at 12.5MHz with a 20Mb hard drive. As well as a backlit LCD screen, the LT also offers external video support compatible with VGA.

Measuring 12.3 x 9.9 x 2 inches and weighing in at approximately 7lb, the machine can run either from mains power via an AC adapter, or with a 12 volt battery giving two hours of continuous use.

A retail price of $3,900 has been set in the USA. Again, there is no word from Commodore UK on pricing, but a direct translation would suggests a price tag of between £2,500 and £3,000.

• Right: Commodore's 286 portable goes for the big spenders.

Sim City takes on the planet

The follow up to *Sim City*, entitled *Sim Earth*, will be released this autumn on the Maxis label.

Not surprisingly the game has the concerns of an entire planet for the player to solve, rather than a mere city. Amateur ecologists should give it a warm welcome – globally.

Nintendo sues over poke generator cartridge

GAMES CHEATS LEAD TO COURT ACTION

Nintendo of America, the Japanese-backed games giant, has taken legal action in San Francisco against Lewis Galoob Toys Inc. It claims that the toy company's new product Game Genie – a kind of 'automatic poke generator' – is an infringement of copyright.

Game Genie is as an attachment designed to change essential features of various Nintendo games to make them easier for the player. Once plugged into Nintendo's *Super Mario Bros*, for example, it can be used to alter the speed of the main characters, allow them to float over obstacles, give them infinite lives or even skip entire levels of game play.

However it seems that the California-based company may well have fallen foul of a US law against creating 'derivatives' of copyrighted video games without the express consent of the game's owner.

Nintendo first heard about Game Genie through a press release early in May, and promptly notified Galoob that it would sue for copyright infringement.

• *Nintedo's Howard Lincoln: 'games at risk'.*

Galoob filed a suit of its own as a delaying tactic and then agreed to demonstrate Game Genie to Nintendo in an effort to gain an official marketing licence. Nintendo refused to play ball.

Howard Lincoln, Nintendo's senior vice president, explained why his company saw Game Genie as such a serious threat: "By substantially changing the play of our games, Galoob's product directly compromises the depth of play and challenge of Nintendo's games – games which now take hours to master can be 'mastered' in a matter of minutes, without any skill whatsoever. We cannot stand by while the essence of our business – the creation of ever more challenging video games – is put at risk by the Game Genie product."

The precedent for such legal action dates back to the introduction of 'speed up' kits for the *Pacman* arcade game. American courts found that the kits were derivative works of the original *Pacman* game and banned their sale.

• To put into perspective Nintendo's American market, it has been estimated that the income from spin-off merchandise alone (T-shirts, badges, caps and so on), amounts to a staggering $200 million a year – more than the turnover of the entire UK computer games industry.

Meanwhile, in another part of America...

A company called Duo Computers of Miami, Florida, has combined a PC and a complete Nintendo game system into one unit.

Called the Duo FC, the computer contains an 8088 processor, 640K of memory, an Ad-Lib sound card, a 5.25-inch floppy drive – and the standard Nintendo game system. There is also a Duo FC Plus which is an upgrade including a 286 processor, 1Mb of memory and a 20Mb hard drive.

The PC has open architecture, including free slots for enhancements, and both systems are bundled with entertainment and educational software. The systems also allow dual processing so that the PC and Nintendo can be run on two monitors at the same time.

Duo Computers claims that this is the first system to allow for full colour EGA and VGA colour on a TV screem. Another feature is that any Nintendo or PC screen output can be saved directly onto videotape.

The machines are due be released this autumn with the FC costing $999 and the FC Plus $1,899.

Duo Computers has no affiliation whatever with Nintendo and carefully states in its promotional material that its system is: "Not designed, manufactured, sponsored, endorsed or warranted by Nintendo".

Computerised coach analyses soccer skills

Two scientists at Liverpool Polytechnic have pioneered a computer system that can expose a football team's strengths and weaknesses – and even predict the patterns of play which are most likely to give a result.

The scientists, Mike Hughes and Tom Reilly, use a system based on a BBC computer, together with videotapes of soccer matches, to provide a detailed analysis of the methods and tactics used by a particular team. This includes a breakdown of the performance and fitness of individual players, and there are computer programs designed to search for examples of specific kinds of play.

The system has already been used to analyse the Mexico World Cup, comparing the tactics of the four teams that reached the semi-finals with those that fell by the wayside.

Not surprisingly the teams that retained possession longest tended to come out on top, with the sides reaching the last four averaging 5.59 'touches' of the ball before losing possession, as compared to 5.22 for unsuccessful finalists.

More recent comparisons between England and the Republic of Ireland show that England's 'degree of elaboration' reached 5.49 as opposed to Ireland's 3.54. But then the Irish style of play under Jack Charlton depends more on harrying opponents into making a mistake and attacking instantly with a long ball.

When asked which team would actually win this year's World Cup, Tom Reilly said: "I can tell you that with absolute certainty – based on the same kind of certainty as 65 million other soccer fans!"

Maybe Ireland will win after all.

• *Pedal power on the Atari XE.*

8-bit bikers

An soccer simulation, a football manager game and a mountain bike simulator are the latest budget games for the Atari XE.

The soccer sim, *Fantastic Soccer*, has animated players running around the pitch with all the features of Saturday's favourite game. *World Soccer*, in contrast, is a strategy game which lets you manage the team.

When you're tired of football you can slip in the *Mountain Bike Racer* cassette and pedal away on this, er, interesting bike simulator.

All three are out now and cost £2.99 each from Zeppelin. They were written by Ian Copeland.

Tiny hard disk packs in the data

A 40Mb hard disk just 2.5 inches across is being developed by Fujitsu for the latest, light-weight, book-sized computers.

Called Project Hornet, the disk drive is the brainchild of an American company, Intellistore, which was acquired by Fujitsu in 1987. The 2.5-inch disk is eventually expected to replace the current 3.5-inch and 5.25-inch drives as manufacturers compete to achieve smaller and lighter portable and pocket computers.

2.5-inch hard disk drives with a 20Mb capacity have been in production in Japan by Victor since January, but 320Mb was recently fitted on a 3.5-inch drive.

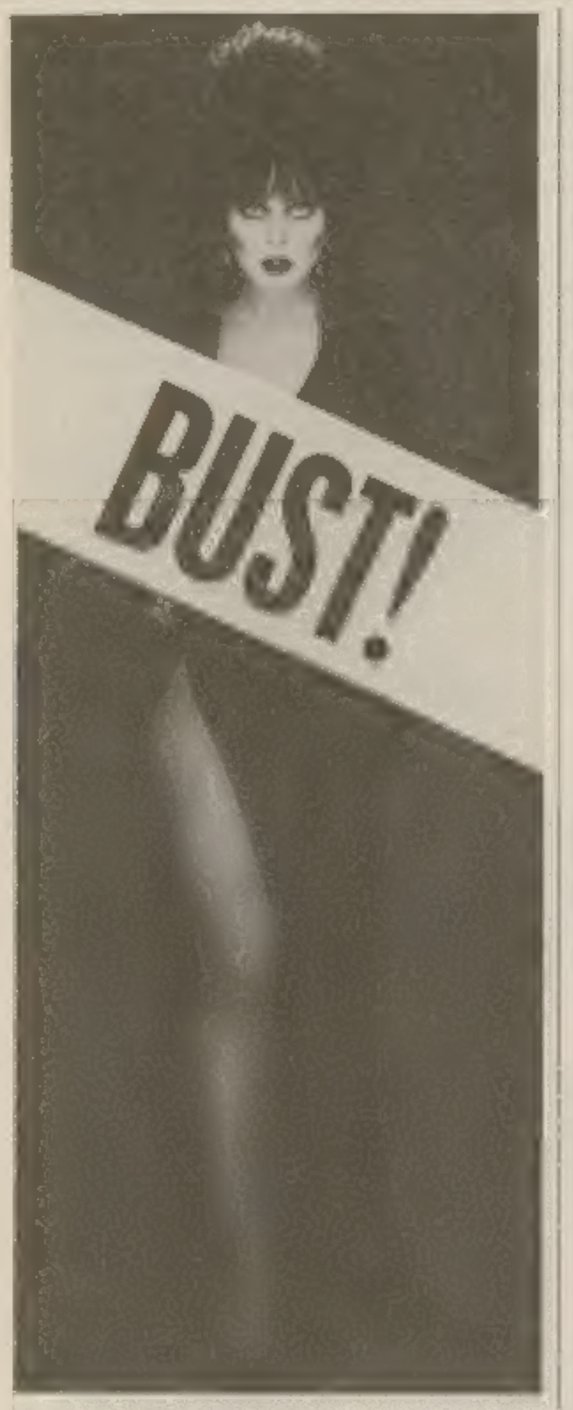
One for the wireheads...

***The Programmer's Technical Reference* by Dave Williams is a manual for IBM PCs and their clones which claims to have more relevant information than any other book of its kind.**

The manual, which details everything from putting together Microsoft Windows applications to DOS interrupts and how to write device drivers, is available now.

It is published by Sigma Press at £16.95 (ISBN 0 85058 199 1), and available from computer dealers and bookshops.

• *Get techie on the PC.*



Tynesoft, one of the longest established, independent software developers in the business, has gone into receivership despite – or possibly because of – its much vaunted game *Elvira*.

The Newcastle-based company had already established a strong reputation based on releases like *Circus Games* and *Personal Nightmare*. The success of the latter prompted the company to secure the right to base a game on the persona of US cult horror queen Elvira Morgan.

A new label, Horrorsoft, was created specially for the launch and success seemed guaranteed. The company had also signed a deal to publish some of its games on NEC's PC Engine.

Delays in the release of *Elvira* are thought to have contributed to cash flow problems, which in turn resulted in receivers Price Waterhouse being called in. A fire on Tuesday May 29, which destroyed numerous tapes and disks, has hindered the accountancy company's efforts to realise Tynesoft's assets.

Mad Hacker locked up for three months

Nicholas Whiteley, the 21-year-old self-styled 'Mad Hacker', last week became the first person to be jailed in Britain for computer hacking.

He was jailed for four months, but prosecution demands for £28,000 costs and the confiscation of his computer were refused by Judge Rivlin QC. The prosecution wanted his computer confiscated because they considered it to be a 'weapon' in his hands.

Whiteley hacked into college computers in London, Bath and Hull and caused £25,000 worth of damage by deleting files.

When Whiteley was denied legitimate access to the college computers he saw this as a challenge and hacked his way in, deleting files and leaving challenging messages for the system managers.

He was convicted on four counts of criminal damage to the computer disks. He was cleared of three other charges of criminal damage and the prosecution dropped six similar charges during the trial. The offences took place in 1988.

Sentencing him to a year's imprisonment with eight months suspended, Judge Rivlin said that Whiteley had boasted of his exploits and was hoping this would help to promote a computer magazine that he was starting.

Whiteley's employer, Jonathan Balkind of the London Opera Company, said that Whiteley's job as part-time computer consultant would be open to him when he got out of jail.

Gleadow contradicts his boss in Atari Show speech

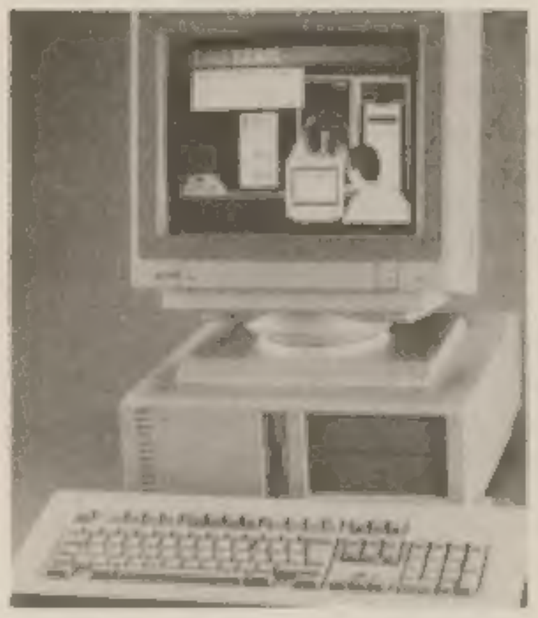
ATARI UK DISMISSES 'IMMATURE' CD-ROM

Only hours before Atari president Sam Tramiel revealed plans for a CD version of the ST (see page 3) the company's UK boss, Bob Gleadow, was assuring UK journalists that no such machine was coming.

"We have a peripheral add-on to sell to the existing user base," Gleadow told a press conference at the Atari '90s Show at London's Novotel, referring to the company's plentiful stocks of unsold CD-ROM drives, "and the price is still £399". But his answer to whether there would be an integrated CD-ROM/ST ran to just one word: "No".

According to Gleadow: "CD-ROM simply lacks software development support" He said that the software available for ST drives included such useful items as "the Swiss telephone directory and a spares list for the Boeing 757". Atari would support any developer who wanted to move to CD, but at present "multimedia is an immature concept... a buzzword".

Having outlined its plans to become a $1 billion turnover company by the end of 1994, Atari also used the show's press briefing to add a relatively low-key announcement of the availability of a 16MHz 386SX addition to its ABC PC range and of the ST-compatible TT (Thirty two, thirty two) machine.



• Atari's new ABC386SX a 1Mb machine apparently running OS/2, which needs 2Mb minimum – perhaps Atari knows some memory tricks which have passed us by...

The new ABC386SX/40 comes with 1Mb of RAM expandable to 8Mb on the motherboard, 3.5-inch and/or 5.25-inch floppy drives and a 40Mb hard disk. It has three expansion slots, supports VGA and carries a price tag of £1,499 plus VAT.

The long-awaited TT runs off a 16MHz 68030 processor and comes with a 'VGA-like' display capable of three display modes: 320 x 480 with 256 colours from a palette of 4,096; 640 x 480 with 16 colours and 1,280 x 960 monochrome. Gleadow said that Atari could guarantee a "high degree of compatibility" with ST software, and put forward a figure of over 90 per cent for text-based programs. PD utilities, however, "will be a problem".

The TT is priced at £2,294 including VAT. No price is yet available for the Unix version of the machine, which will be launched in September.

Although press packs distributed at the conference included a document vaunting the immediate availability of an £1,800 4Mb Stacy laptop with built-in battery pack capable of powering the machine for between 5 and 35 hours, the Stacy announcement was clearly somewhat premature.

Gleadow told press that Atari had "a corporate ambition to launch a new Stacy with a four-hour battery pack" and hoped that it would be backwardly compatible so that existing Stacys could be upgraded with it.

The Novotel show attracted 8,000 visitors, described by Atari as 'a creditable total'.

• For more news from the show, see Steve Carey's ST column on page 16.

House style counsel

Do your office's documents need a more uniform writing style to put over the company image?

***Corporate Voice* is a PC program which takes documents and letters and puts them into a house 'style'. It takes about ten minutes to calculate a corporate style model from existing documents.**

A library of style models for different appplications can be made up and any member of staff can use them to improve drafts to company standard. To complete the package, there's a book included called *Writing to Please Your Boss* .

It costs £171 from Scandinavian PC Systems on 0926 314334.

PostScript 2

The PostScript page description language used to drive high-quality laser printers by desktop publishing and printing packages has been completely revised

PostScript Level 2 corrects some of the flaws in the original, including better-colour support, and publisher Adobe hopes that it will stave off competition from the many PostScript 'clones'.

It will be introduced to developers late this month and we can expect to see applications using it by early 1991.

Two cheap 8-bits out

***A Question of Sport* and *Supertrux* are two budget games announced by Encore for the Spectrum, Commodore 64 and Amstrad CPC.**

***A Question of Sport* follows the format of the the TV quiz and *Supertrux* is a truck racing simulator.**

Both are priced at £2.99 in all three formats and they should be available by July.

Grid lock

The Amiga version of *Super-Gridrunner*, the game that won the 16-bit Budget Game Award for 1989, is now out.

It is a shoot-'em-up with 'intelligent' bad guys and, in the Amiga version, the first 32 of the 64 levels are selectable. This gives a player a chance to practice the different levels – including some easier rest levels – before going on to attempt the top 32 in sequence.

SuperGridrunner is published by Llamasoft, and costs £10.95.

Charity begins at Hull as fundraising show takes off

A Humberside fund-raising exercise which originally set out to raise money for the local Scout group looks like turning into the biggest charity – and computer – event of the summer.

The Compute For Charity Exhibition will take place from 10am to 7pm on Saturday, June 30 and 10pm to 5am on Sunday, July 1, at the University Exhibition and Conference Centre, Cottingham Road, Hull.

Organiser Andrew Whittaker (who has been sponsored to lie in a bath of custard wearing fancy dress), seems set to turn the show into a mega media extravaganza.

The BBC has agreed to publicise the event on *Blue Peter* and *That's Life*, and other coverage includes local TV and radio as well as national newspaper and magazine support.

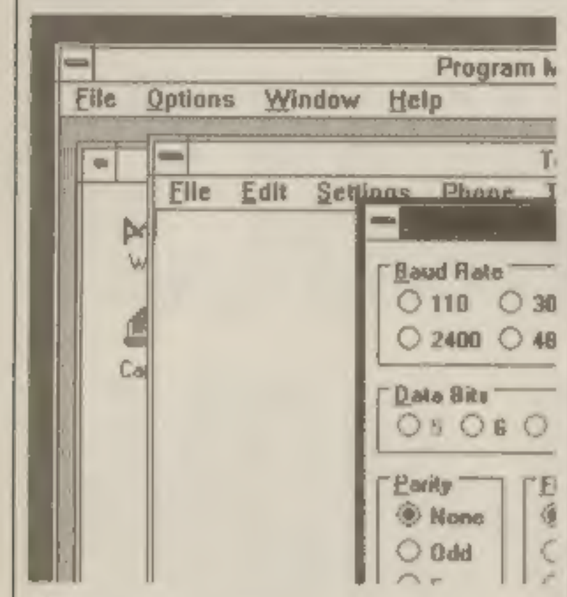
Over 30 different companies have pledged support, including software manufacturers, distributors, shareware specialists and publishers.

Events at the show range from an adventure helpline to a special MIDI hall, and there will be a science fiction and fantasy convention running in parallel – with Anne McAffrey, Terry Pratchett and Neil Gaiman among those who are expected to attend.

One well known SF conventioneer, David Hodges, has promised to arrive with a ten-seater car in the guise of a spaceship. He was also responsible, along with Douglas Adams, for putting the whole of *Hitchhiker's Guide* on a database – and a signed printout will be auctioned at the Hull show.

Initial targets for the show's fundraising were a minibus for the Scout troop and a computer system for handicapped children. It now looks as if these will be achieved with ease and any extra money raised will go to the BBC's Children In Need appeal.

Assuming the event is a success, and after such sterling work this is certainly deserved, there are already plans to 'take it on the road' and tour the country.



• *Windows 3: huge sales.*

Windows 3 sells 100,000 in two weeks

Microsoft Windows 3, the latest version of the graphical user interface for the PC has sold over 100,000 copies within 14 days of its release.

It allows the opening of different applications in its windows and can run several simultaneously.

Windows takes control of the operating system and allows the PC to multitask by sharing the processor's time between resident programs.

The £113 package has also been ordered as an upgrade by hundreds of thousands of existing users. ■

• See page 46 for a full review of Windows 3.

Power packed PC lifesaver

A PC board that can save the memory of your PC if the power is lost through a power cut, and re-boot when the power is restored, has just been released.

When power is lost, the Accucard board uses its own power to save the contents of the memory to hard disk. When the power is restored, it can reboot the computer to the point where it was before power was lost.

The Accucard works with any hard disk PC, and costs £230. It is available from Emerson on 0793 524121. ■

Poll shows more PCs are sold than software packs

HALF UK COMPANIES RIP OFF SOFTWARE

More than half of PC-using British senior managers use bootleg software on a daily basis according to a survey conducted by MORI for the Federation Against Software Theft.

Senior staff from Microsoft, Lotus, Ashton Tate, WordPerfect and Frontline Distribution turned out for a conference at the British Computer Society last week to stress that the MORI poll figures had serious implications for the software industry, and FAST took the opportunity of the poll's publication to announce a new campaign to raise corporate awareness of the illegality of internal software theft.

Backing up the soft approach of educating managers, many of whom are reckoned to break the law only because they are ignorant of it, the second prong of the campaign would be to resort to prosecution, or "walk softly for a while, but use a big stick if necessity dictates," as FAST chief executive Bob Hay put it.

"To spend thousands of pounds on hardware and then to cheat on software for the sake of a few pounds is a very silly thing to do," said Paul Sloane, managing director of Ashton Tate. He said that because of piracy software companies have less money to invest in research and development, and that creativity suffers.

By Ben Feinbaum

"The software industry is behind where it should be to take advantage of the newest hardware advances," said Sloane.

David Svendsen, managing director of Microsoft, said that his company will be introducing a pay-for-licence system, where the buyer must register the intended number of users for a package, and for each user after the first a licence must be purchased.

Piracy means that legitimate users are paying too much for their software, according to Nick Harding, managing director of top distributor Frontline, and this is exacerbated by dealers' takings being artificially biased towards hardware, which the pirates still have to buy.

The scope of software theft last year is calculated at well over £300 million in the UK alone – a 100 per cent increase on estimates of four years ago.

FAST chief executive Bob Hay added that in an ideal and perfect world there would be a ratio of 2.2 to 1 of software programs to PCs sold over a given period. There were 700,000 PC sales in the UK last year, but only 686,000 PC software packages were purchased – a ratio of less than one per machine.

The MORI findings also imply that the majority of British industry managers are unaware of the legal position regarding disk copying, that rigorously applied software policies within a corporation greatly deter software theft, and software audits deter continued infringement. ■

The figures

• 55 per cent of senior managers using PCs at work copy software illegally, either knowingly or not.
• Of all senior managers, 41 per cent have recently broken the 1988 Copyright, Designs and Patents Act.
• 37 per cent of senior managers admit to having acquired a piece of software and loading it on to more than one machine.
• 29 per cent of those managers have accepted a copy of a software program from a colleague and installed it on their own machine.
• Among the general public, 43 per cent of regular PC users admit to having illegally used software

Long distance orchestration

Musicians up to a mile and a half apart can now perform together in perfect time and harmony – and with no electronic distortion.

In the past, MIDI connections have depended on cables which were limited to 15 metres in length by signal corruption. Although these cables could carry 16 control codes, each digitally labelled as a distinct data package, it was strictly one-way traffic.

Now Lone Wolf, a company in Redondo Beach, California, has developed MediaLink, a system which lets an optical fibre carry MIDI signals to more than 250 instruments, in both directions at once, over distances of up to 2.5 kilometres.

It also allows a composer to connect a micro to a number of musical instruments by a local area network in what the company calls a 'landscape' of sound.

The software combines all the MIDI information into a single stream with a data rate of two megabits per second.

The system costs around £480. ■

Volksbundles

Three budget word processing bundles from Volkswriter are designed to fill word processing needs without breaking the bank.

The cheapest, ■ £114.94, contains *Volkswriter* 1, a spreadsheet and a graphics program.

The mid-range package, costing £149.45, contains the upgraded *Volkswriter 2*, a spreadsheet, graphics tutor and a DOS tutor, and the top of the range, £229.94 offering fields the latest *Volkswriter* 3.2, a spreadsheet and a typing tutorial program. ■

COMMENT

Bob Gleadow and Sam Tramiel have some getting together of heads to organise in the very near future. Only days separated the former's observation that an all-in-one ST/CD-ROM was definitely not on the cards and the latter's declaration that the same machine was already in the Atari pipeline.

It would not be merely charitable to Gleadow but probably correct to assume that his US boss has completely wrong-footed him with what must have been an unexpected announcement.

It is hard to believe that work can be far progressed on a machine that Bob Gleadow knows nothing whatever about. One must conclude that Tramiel has made a snap decision on a CD-ST, probably induced by the attention attracted by Commodore's CDTV at the Chicago CES.

Let us hope that, having been announced, the machine will go ahead, and that Atari US can force the pace on software development enough to quell its UK arm's fears that the concept is immature and the projected launch premature.

NEW COMPUTER EXPRESS

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Printed by Redwood Press, Melksham
Distributed by Comag, West Drayton

ABC audited circulation July-December 1989: 22,277 per week

Future Publishing Ltd · 30 Monmouth Street, Bath BA1 2AP · Tel: 0225 442244 · Fax: 0225 446019
Subscriptions: The Old Barn, Somerton, Somerset (0458) 74011

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Miles Gordon Technology calls in the receiver

COUPE IN TROUBLE AS MGT HITS HARD TIMES

As *Express* went to press on Monday, June 11, news broke that Miles Gordon Technology had gone into administrative receivership that day.

It is believed that the SAM Coupé manufacturer itself appointed a receiver manager, as opposed to having one forced upon it.

While it is theoretically open to the receiver to attempt to save the company by trading into into a viable position, informed sources consider it likelier that they will attempt to find a buyer for MGT as a whole, or as a last resort at least try to place the Coupé with a new owner.

MGT was totally unavailable on the telephone on both Friday afternoon and Monday, and failed to reply to various messages left on its answering machine. Neither was the company's public relations agency in a position to offer an official comment by press time.

However, the Swansea Centre for Trade and Industry, which helped arrange MGT's move from Cambridge last year, was able to confirm that some form of receivership had been entered, and immediately pledged its support to the ailing company.

"We would wish to play as positive and enabling role as there could be," SCTI's assistant director, Michael Burns, told *Express*. "We have had meetings with them already, and we intend to speak to them to see what initiatives can be taken. We will stand by the company and give them advice and guidance as far as we can. The 35 jobs are important to the Swansea area."

• *MGT's Bruce Gordon: no reply.*

Burns said that on a personal level he would endorse the Coupé as a product: "I think that it's a super computer that will sell well. I bought one for my kids as an act of faith. We hope to get it back on its feet as a commercial product."

Already canvassed by pundits as a potential buyer for the company is Alan Sugar. As owner of the Spectrum, Amstrad would be acquiring the only existing direct upgrade path for the machine by adding the Spectrum-compatible SAM Coupé to its stable. The counter argument is that the Coupé may be regarded as a clashing product to the CPC upgrades which Amstrad is preparing to launch this autumn.

Although regarded by many as a potentially very good machine, the SAM Coupé has been persistently dogged by misfortune. It first failed to meet its projected pre-Christmas launch date last year, losing out on the key sales season, then suffered delays on its DOS shipping followed by having a ROM chip upgrade issued – at additional cost to MGT – only months after the machine's launch.

Ironically, the company is floundering just at the time when SAM Coupé-specific software is beginning at last to appear on the market.

FROM The ARCHIVE

ONE YEAR AGO

Atari stole Nintendo's thunder with the colour hand-held Lynx console. The Nintendo Gameboy with its black and white screen may have been out-coloured but it wasn't out-priced. The Gameboy weighed in at about $89 which put it at the top of the impulse-buy bracket.

Amstrad was looking at the idea of a console but had its problem child, the PC200 to worry about first. Inside sources at Amstrad confirmed that the PC200 would be receiving corporate backing for the autumn.
• One year on the PC200 has all but sunk from view and Amstrad has console launches planned for autumn 1990.

A West German caught supplying secret data to the Soviets, but not charged, committed suicide. He doused himself with petrol and set himself alight. German police confirmed that it was suicide and said that foul play had been ruled out.

A meeting of FAST (The Federation Against Software Theft) at the Houses of Parliament confirmed that software piracy would be tackled at a European level. As well as lobbying for laws in the UK for software protection, FAST acknowledged that any cross-frontier efforts to catch pirates would have to be undertaken 'as a team' and would need co-ordination to be successful.

City chiefs were so worried about the security implications of having their systems broken into that they were buying the silence of hackers who had successfully broken into their computers. The Computer Industry Research Unit said that at least six major financial companies had offered amnesty to hackers in return for a percentage of what they'd stolen returned.

Herbert Zinn Jnr, an 18-year-old US hacker, was jailed for nine months and fined $10,000 for illegally penetrating US defence and AT&T computers. While on line, he copied $1.2m-worth of programs and destroyed files worth $174,000. The offences took place when he was 16 and 17. If he'd been an adult, he could have faced 13 years in jail.

UK firms frightened by the prospect of hackers were hiring 'tiger teams' of hackers to break into their own systems to test security. The tiger teams were supplied by firms of security consultants.

TWO YEARS AGO

IBM told its dealers to inform customers of a slippery problem. The hard disk in its PS/2 70 models had developed a leak in their lubrication system. IBM pledged to replace faulty units

The world shortage of memory chips (DRAMs) showed no sign of abating. 256K DRAMs were selling for £11 compared with less than £2 a year before.

Freescape developer Incentive was ready to release *Dark Side*, the sequel to its 3D blockbuster *Driller*. It was to be released first on the 8-bit formats. The Freescape games were developed on the 8-bit machines and with the 16 bit snobbery rife at the time it was refreshing for the Spectrum, CPC and C64 owners to get their versions first.

At the Computer Entertainment show in Chicago, consoles were taking off in a big way. As usual, we British were more conservative and it's only as we reach half way into 1990 that consoles and their offspring, hand-helds, are becoming a force to reckon with.

Sources: New Computer Express, Computer Trade Weekly

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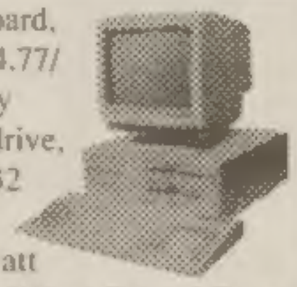

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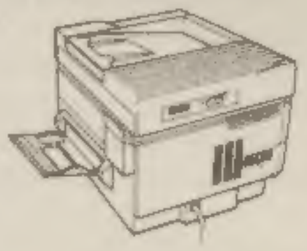

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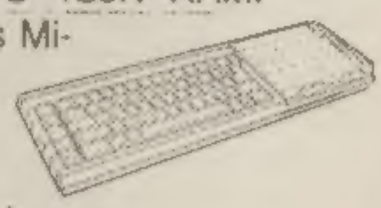

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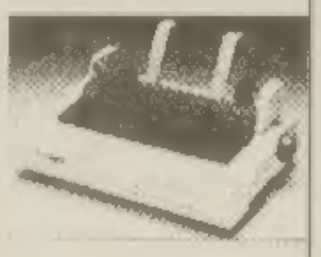

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CPC

THE "MATURE" CHOICE

"Would you, dare you, publish a letter from a reader who is not in the usual CPC age group – 14 to 24? I have a 6128 but, unlike my grandson, who likes the occasional shoot-'em, bash-'em and chase-'em games, or my son, who spends hours studying the instruction manual to fly his hi-tech jet, my favourite game is *Mini Office II*."

Thus writes Peter Beck of Norwich, in single-spaced, justified Elite, by the way – just to prove I know all about these things.

"I have two questions for you and your readers. With my *Mini Office* I do the usual things, like writing this letter. I keep a few records on a database, including the names and addresses of my friends and relations so that I can produce labels for my Christmas cards and holiday postcards.

"I can produce a church and club newsletter and update a list of members and I even keep records of my 35mm slides. But what else? The potential seems enormous, and perhaps you and your readers can come up with some ideas of ways in which to realise that potential?

"My second question is this. Can anyone suggest any 'old boys' games? I have *Scrabble*, *Monopoly* and *Trivial Pursuit*. I have tried *Snooker* and *Sailing* and even had a bash at *Paperboy*, but the best is *Jack Nicklaus Golf*.

"Somewhere out there must be (at least one) reader whose hair is getting a little thin and whose reactions are getting a little slower but still has some ideas and a 6128!"

Well, Mr Beck, you're right about your CPC's potential. You don't say whether you've plumbed the murkey depths of programming yet, but that could be a good little challenging exercise. The CPC's own manual should get you started.

As for 'old boys' games, you don't mention chess, which is very good, and you can try ringing CDS on 0302 321134 to see if you can get hold of a copy of *Colossus Chess 4*.

Trenton Webb, *Amstrad Action*'s games supremo, also recommends trying adventures rather than traditional arcade games. The Balrog (of JRR Tolkein fame) writes a regular column in *AA* detailing all the latest releases and swapping hints and tips for all the CPC adventuring classics.

WHAT A B...!?*

I've never been able to get very far in the game *How to be a Complete B...* I'd like to think that's simply because I'm such a nice guy. That's what I'd like to think. The other possibility is simply that I'm pathetic at the game.

Anyway, the following tips proved pretty darned useful, and should help out anyone else who's stuck:

1. Don't reset the computer.
2. The laxative has smelly properties when eaten.
3. Points are scored for opening the umbrella.
4. Drink the stock of booze to see the room spin.
5. Black coffee loses you points but sobers you up.
6. Itching powder, sneezing powder, shaving cream and toothpaste can be used in the same way.
7. Search the trees as well as all the objects in the house.
8. The hammer and the matches have destructive effects.
9. You are not a very good musician.
10. None of the dustbins are empty.
11. Talc and the sheet can be scary.
12. Don't press the F key in the kitchen.

Where did I get these handy clues?

Where else than the spiffing new *Cheat Mode II* book? In case there's anyone who doesn't know, this book has 750 cheats from the past three years of *Amstrad Action*'s Cheat Mode section. Price is a mere £9.99 – £11.99 to get all 400 pokes already on cassette as well – and you can order from: *Amstrad Action* Cheat Mode Book Offer, Freepost, Somerton, Somerset TA11 7BR. Add £1.45 for p&p.

Rod Lawton

BLOODWYCH ARRIVES!

Anyone who keeps abreast of the 16-bit scene will know what a rumpus *Dungeon Master* caused when it came out. At last, there appeared a hands-on role-playing epic that put you right there in the thick of the action as you led your party of warriors, magicians and general good eggs through murky and trap-laden dungeons.

Well now CPC owners can taste the action, thanks to Mirrorsoft's Image Works label, and its latest release *Bloodwych*.

The name's different, but the game's pretty much the same. The *Bloodwych* are the good guys, legendary White Mages of Trazere, and they have selected you to lead your party in a quest to search out and thwart the evil Zendrick, an ex-Bloodwych type and not a very nice person at all.

In fact, Zendrick is so un-nice he plans to summon a Lord of Entropy, a being that will lay waste to the world – unless you can step in beforehand.

You must first select your four fellow adventurers from a choice of 16, then equip them with various magic and fighting skills. And then you lead them into Zendrick's castle, and a hazardous search for keys, secret panels, treasure, weapons and – ultimately – the castle's four towers, each each of which contains a Crystal of Holding. Collect all four, and the world is saved.

Your view of the dungeons is a nicely-drawn, solid 3D affair. As you move forward, though, the whole thing doesn't move smoothly with you but one step at a time.

***Bloodwych* is not all about arcade action – it's more of a puzzler than a straightforward blast. Whenever you meet a new hazard you revert to the screen's icon selection system to pick which member of the party is best equipped to deal with it. And using the icons you can swing swords, cast spells and generally flail about like a mad thing until you stumble across the correct solution.**

The only disappointment graphically is that only half the screen is used: that's because of *Bloodwych*'s two-player mode. In this mode, another player can drum up his own, entirely independent, band of adventurers, and can go wandering off through the dungeons quite separately to your group. And if you should accidentally meet up while exploring the depths of Zendrick's fortress, you can either chose to co-operate Zendrick's downfall or – if there's some rather handy treasure/weapons in the hands of some rather feeble characters on the other team ... well, I'll leave it to your conscience.

***Bloodwych* is not all about arcade action, despite the polished, arcade-style graphics. It's more a role-playing adventure, but one so far removed from the traditional text-heavy and graphically-weak style of old as to mark a major step forward in gaming.**

If you want to lead four brave adventurers against the evil Zendrick in *Bloodwych*, it'll cost you £9.99 on cassette, £14.99 on disk.

• *Choosing your party in* Bloodwych.

MACHINE SPECIFIC COLUMN

CPC 9
Spectrum 10
SAM Coupé 10
PCW 10
MSX 10
QL 11
BBC 11
Archimedes 11
C64 11
Amiga 13
PC 14
ST 16

• *In the thick of it with* Bloodwych.

• *Simple concept, but the addictive play makes* Klax, *the puzzle game, a winner.*

• *A game that was scooped by Space Ace, Dragon's Lair nonetheless has visual and sound effects that are downright stupefying.*

SPECTRUM

I AM THE BEAT

When it comes to making music the Spectrum's usually thought to be old, out of date and pretty untalented. This never stopped Phil Collins though and as Jon Bates showed in his Sounds on the Spectrum article (*Express* 79) our computer really lead the way in early music software and still offers comprehensive music making on the cheap. So there.

If you remain unconvinced the arrival of *Music Writer* should rest the case once and for all. This is a 128K music notation utility that I've had for a few weeks and just about got to grips with despite, erm, somewhat limited knowledge of crochets, rests and all those other squiggly things musical types go such a bundle on.

Luckily, thickness on my part didn't matter too much because *Music Writer* is easy to use. For starters it's completely WIMP-driven in convincing 16-bit style with a joystick, Datel mouse or keyboard controlled pointer, allowing you to select neatly drawn icons and get around the program's main screens.

There's the Music Sheet window which displays all three staves of the score you've written or loaded in (a variety of demo pieces are included in the package) and this is where playing and general editing of the bars takes place. Here, you can select pitch, time signature and which of the three channels you want to play.

The program's other main screen is the Bar Editor. This is where you actually create music or, in my case, lots of funny bleeeping noises. One bar and two staves only are displayed and you enter notes by picking up the one of your choice with the pointer and dropping it on the stave.

It's all very easy although the fact you can use trills, diminuendos, mordents, glissandos and slurs among many others will probably mean more to musos than to stupid old me. Also selectible from this screen is the Voice Editor which can hold 10 voices, and it displays pitch while volume envelopes waveform in graph form.

Of course, that's a pretty skimpy overview due to lack of space, and the professional looking manual is almost bursting out of its ring binder with descriptions of complicated features and facilities. Thankfully, the well-implemented WIMP system means even people who were hated by their music teacher can explore the program's depth, although I'd imagine novice musicians with a keen interest in learning to read and write musical notation will get the most out of this smooth, profesionally-programmed utility.

It's great to see independent software of this quality and even a musical dunce like me can see *Music Writer*'s potential as a score writing program and learning aid. Anyone with A) an interest in creating music and B) a Spectrum with 128K would do well to get hold of a demo version for a meagre £3 (refundable against purchase), and if you trust the word of a non musician like myself, pluk for a full blown copy for £19.95 (+£2 P&P). The address is G Rowland, PO Box 49, Dagenham RM9 5NY. All versions come on tape with an option to transfer to disk.

POKE ALONG

Here's a quick hack for *Impossamole* courtesy of *Enigma* Co-Ed Jon Rose. Thank you Jon!

```
10 CLEAR 24063: LOAD "" SCREEN$: LOAD
"" CODE 24064
20 POKE 53471,201: REM Infinite energy
can also be used as a single Multi-
face poke
30 RANDOMIZE USR 52261
```

Robin Alway

SAM COUPE

THE CREAM OF THE COUPE

Something that's rightly worrying a lot of Coupé owners and is probably proving a tad disconcerting for their SAM as well is the distinct lack of Coupé software. Apart from some excellent utilities, like *Samtape* from Lerm, most of the promised releases have been delayed due to unforeseen circumstances beyond everyone's control.

Thankfully this looks set to change soon, firstly with new SAM-compatible releases that should be available by the time you read this and following that, the first enhanced SAM games. Here's the latest news on Coupé software.

Both US Gold and Ocean have taken the wise step to release Coupé versions of some of their latest wares. Sadly, these will be exactly the same as the speccy versions but will load straight into our new friend without any messing around with emulators.

Titles that should have hit the shelves by now include *Ghouls 'n' Ghosts*, *Strider*, *Batman – The Movie*, *Rainbow Islands*, *Black Tiger* and *Robocop*. (By the way, it looks like the long awaited SAM version of *Strider* has been scrapped.) *Delta Charge* form Thalamus and three educational programs form Rickitt Educational media – *Puncman*, *Spanish Gold* and *Granny's Garden* – should also be SAM compatible and in the shops now.

Even more encouraging and likely to induce drooling in some cases is the promise of games specially enhanced to take full advantage of our mate SAM's capabilities. The very first piece of SAM-specific software looks like being *Defenders of the Earth*, a cartoon conversion from Anco/Enigma.

Hopefully following in its wake will be *Kick Off II*, *World Boxing Manager* and a trio of cheapos from Interceptor called *The Race*, *3D Snooker* and *Superleague*. Good, eh? You can be sure I'll keep you up to date.

Robin Alway

PCW

FUTURE SHOCKS 1

Ken Limage of Seaford, Brighton, has a PCW with a difference.

According to an article in the 24 May edition of the *Brighton Evening Argus* (kindly sent to me by JM Johnson of Brighton) he has no control over what his PCW 8256 prints out – so what else is new, many of you are most probably saying to yourselves.

But Ken's printouts can tell the future. For example, recently his dot matrix told him that he would shortly be having problems with his car – and sure enough it broke down only days later.

Then his machine told a friend of his that his car would fail its MOT on the brakes and, amazingly, that's exactly what happened.

Now I must admit it would take more than a few predictions of a car breaking down to convince me – my car breaks down with regularity just a few days before payday every month – but I'd be interested to hear if any other psychic PCWs.

And sorry, but *LocoScript*'s warning when you edit a file that is bigger than the space on the disk – that 'Document may not fit, send result to drive M' – doesn't count.

FUTURE SHOCKS 2

I'll tell you someone who was better than average to good at predicting the future. One chap writing in the magazine *8000 Plus* in June 1988 said *LocoScript PC* was on the way.

Well, now, as we all know, it has finally arrived, just two years later. I think his name was Rob Ainsley.

JETTING ABOUT

If you've written a database using Jetsam in BASIC, and want to use the information in *LocoFile*, you can just about avoid having to re-type everything again – though there isn't an easy way of transferring things, unfortunately.

First run the following BASIC program on the database .DAT file. Then run up *LocoScript*, insert the disk with .DAT on it and create a new file. Using [f1] 'Insert text' insert the file `ASCII.DAT`.

Records are separated by new pages, but you'll have to organise the fields into separate lines using [EXCH]. Exchange all double spaces to returns, then strip out spurious spaces. You can use the result as a *LocoMail* data file, and hence in *LocoFile*.

```
10 input "Name of file
    to convert";name$
20 open "I",1,name$
30 open "O",2,"ASCII.DAT"
40 while not eof (1)
50 a$=input$(1,#1)
60 if a$=chr$(3) then a$=chr$(12)
70 print #2,a$
80 wend : close
```

MARGINALLY BETTER

A reminder that the quickest way to set margins in *LocoScript* 2. Press [f2] and select new or changed layout while editing, then when the ruler line appears press [+] or [-] to move the margin left or right. Press [SPACE] to move to the right margin and then press [+] or [-] again.

Rob Ainsley

MSX

LET'S GO CRAZY

It is a fitting time to mention a football management game from K-Soft called *Division One* – priced at £4.95. As the name implies, it's a management simulation in which you are given the option of choosing a team from the menu or naming a team of your own.

Like other games of this type you can buy and sell players, borrow money from the bank, and strengthen the team as you wish. Your opponents are picked for you, and you then have to select your match tactics – these can be changed at half time if the need arises.

During play, it is possible that you will pick up a few injuries, so a large squad is required: you must have 11 fit players. When all selections have been made, and you decide to play the match, a clock counts the time played, and pauses the game at half time for you to change tactics if you wish.

The match score is shown as the game progresses, but unfortunately there is no simulation of a match being played, unlike some of the more sophisticated football management games. At the end of the match, the result and your position in the division is displayed.

A cheer from the crowd, and a rendition of Match of the Day would have given the game a better feel. As it is, £4.95 isn't much to ask for a game, but as *Football Manager* from Addictable is now only £2.95, *Division One* is up against it in the value for money stakes, and is given a guarded 6 out of a possible 10 for value.

CLUBBING IT

I received a letter form a Mr Ferguson, asking if I would mention his MSX computer club, which he claims has branches in seven countries in Europe, as well as three other countries. The club is called MSX u.c. (GB), and is based in Livingstone, West Lothian, Scotland. As Mr Ferguson has yet to send me a newsletter for evaluaton, I have declined to publish his full address.

STEEL FLOWERS

Ian Steels has written asking if I can rcommend any cartridge games. He is limited to buying by mail order.

I can recommend *Nemisis 3*, and *Salamander* by Konami and *R-Type* by Irem as very good shoot-'em-ups. Graghically the Konami titles are brilliant, but the Irem game is very playable.

Regarding other types of games, Konami's *Penguin Adventure*, *Kings Valley II* and *F1 Spirit* are all a go. The latter is a very polished racing game and is extremely playable.

Ian also asks how these cartridges can claim to be Mega ROMs. Well Ian, these Cartridges are usually mega bit games – a mega bit is 128K. You will see then that *Nemisis 2* is a 1 mega bit (256K), *Nemisis 3* is a 2 mega bit (256K) and IREM's *R-Type* is a whopping 3 mega bit cartridge (384K), and thus is good value at its £27 asking price. Konami sports sims *HyperSports* 1 and 2 are still available as well.

Send an SAE to the MSX column at *Express*, and a list of stockists will be sent by return of post.

Keith Neal

C64

NO WORKING 64

It's a sad fact that Commodore 64s can sometimes die a death. The faithful computer, obeying its Lord and Master, takes a last little peek at what's going on in the world, and curls up its chips.

Help is at hand, however, should that sad fate befall your own beloved computer. The person to get in touch with, for what appear to be very reasonable quotes, is Mr Lee Faraday.

He lives at 30 Station Drive, Wisbech, Cambs PE13 2PX. I hope your computer lives a long and active life, but its's nice to know that there are people up and down the country who can repair it if necessary

NO POKES?

Would I give you an issue without any POKEs in it? Well, all right, I have done sometimes, I know. Not this time, though, so here we go for another five POKEs to help you through the game. Only five, in case the Post Office throws a wobbler again (see last week's *Express*).

On *Dizzy*, you'll need to `POKE 10776,173: POKE 15942,173:SYS 8192`. On *Lightforce*, you'll need to `POKE 11547,5:SYS 6713`.

On the splendidly-named *Better Dead than Alien*, you'll need to `POKE 40319,189: POKE 40345,189:SYS 16384`. On *Westbank* you'll need to `POKE 12713,165: SYS 4100`.

And finally for this month, on *Dragon Ninja*, you'll need to `POKE 43123,0:SYS 2016`. More cheat modes than you know what to do with!

NO DESERTER

That's the way to describe Jeff Minter, llama lover and 64 software producer extraordinaire.

A collection of eight of his important classic games for the C64 are now available on one disk for £11.95, or two tapes for £9.45. The collection goes under the name of the rather furry name of*Yak's Progress*.

It features such gems as *Matrix* and *Laser Zone*, as well as the two principal camel games and a few sheep and llamas games thrown in to boot. Write to Llamasoft for a catalogue and newsletter (don't forget to include an SAE). The address is 49 Mount Pleasant, Tadley, Hants RG26 68N.

NO 8-BIT ANY MORE

I have given something of a favourable mention in the past to a concern known as Official Secrets.

I am sorry to report that I will be doing so no longer, as the company has now deserted the 8-bit market in pursuit of the no doubt greater profits to be made in the 16-bit arena, despite sales of the Commodore 64 remaining healthy.

If you're a C64 owner with a subscription to the company in question, and you don't own any 16-bit machines, then I would write and ask what on earth is going on.

Pete Gerrard

QL

ASCII FILES FROM QUILL

If you need to generate a standard ASCII text file, and you don't have a suitable text editor, you can use *Quill*. Run `CONFIG_BAS` and set up printer date so that the number of lines per page is 0 (zero), with no preamble. You then print the document to a file.

Of course, to read an ASCII file into *Quill* for editing, it must be imported, rather than read in as a normal document. Since superBASIC programs are stored as ASCII text, you can modify them using this technique.

SPECTRUM EMULATOR

The recent spate of emulators reminded me of a Spectrum emulator for the QL that was announced shortly after the QL first became available.

While the project was certainly quite feasible, a working emulator never materialised, for one reason or another – which remains a mystery.

STRATHCLYDE QL PROJECT

In a letter in *Express* 81, reader Bryan Morton wondered about the outcome of the project at the University of Strathclyde to give every student a QL by 1990. I recently had a word with Dr Richard Kingslake of Strathclyde, who was involved with this project.

Sinclair Research donated 500 machines to the university, and a further 200 or so were purchased, together with monitors and disk drives. The policy of giving each student his or her own QL wasn't too successful – some students were required to take their computers to laboratory sessions, and weren't very keen on lugging them around, and some were stolen. However, those students who mainly used their QLs at home were quite happy with the scheme.

The university's policy now is to have a large number of PC clones, and Hewlett Packard and Sun workstations scattered around the campus.

However, one lab in the computer science department is still full of QLs, used mainly for teaching 68000 assembly language programming, in conjuction with the Talent Programmers Workbench assembler/debugger.

FRACTAL REPORT

I've just received Issue 9 of John de Rivaz's *Fractal Report* newsletter. As usual, it contains a QL-related item – John Topham has been using his QL to investigate the critical region where the classic "bifuracation diagram" produced by the function `x = r*x*(1-x)` becomes chaotic. This is when r reaches about 3.57, if anyone else would like to crank up an experiment.

A listing of SuperBASIC program John developed during his investigation is provided, as well as some screen dumps.

For a sample copy of *Fractal Report*, send an A4 SAE to: John de Rivaz, West Towan House, Porthcowan, Truro, Cornwall TR4 8AX.

John Torofex

BBC

IT'S BRILLIANT

Brilliant Computing is a two man outfit, consisting of one computer boffin (Rod Boyes) and one disillusioned teacher (Nick Pronger). Their collective aim is to provide excellent service to the special needs educational market.

For those of you without an educational background, that means children with either physical or mental disabilities, or severe behavioural problems. They say that the children with the most severe needs are those who could benefit the most from working on computers, and yet this group is the least well served as far as software.

I must agree with that view, so often have I seen promising projects for special needs children, and yet little or nothing resultant from them – a sad phenomenon mostly due to underfunding, or poor promotion.

Brilliant has just sent me its latest 1990-91 catatlogue which, a rare event in itself, is devoted solely to that arena known as BBC products.

The catalogue contains many great ideas and solutions, but I will just mention a couple here. First, a video showing software and hardware actually in use is available to interested parties, which should help overcome the pig-in-a-poke aspect of mail order.

Second, Brilliant's *Malcolm* word processor is designed to let a severely physically disabled person compose documents using just one, or two switches. You may contact Brilliant on the following digits: 0272 497617.

Andrew Brown

ARCHIMEDES

SLIP SLIDIN' AWAY

Paul Greus of 628 software sent me a copy of 'Slideshow this week. As the name suggests, it organises and presents sequences of slides. These are made up of full-screen mode 12 or mode 15 sprites.

The software is fully RISCOS compatible and installs neatly on the icon bar. It does take up 336K, though, which doesn't leave enough for 'Paint' to cohabit on a 1Mb machine.

When you run the program, you're presented with a series of frames which will contain slides or 'transitions'. A transition is the fade or sweep from one slide to the next.

There are 28 different effects available including chequerboards, random dots, venetian blinds, implosions and explosions, and expanding rectangles. The length of your slideshow is governed only by the amount of available memory, and sprites are held in compressed form to save space.

The length of display of each slide can be set, though the speed of transition appears fixed. Slides can be pictures created in any of the art packages which support sprite files and may also be taken from digitised sources. This adds a good amount of flexibility.

At £14.95, 'Slideshow is good value. 628 software is awaiting a file type allocation from Acorn for its sequence files, but a version using a user filetype is available now from 628 Software, 24 Mulgrave Road, Whitby, North Yorkshire YO21 3JS.

ARMS AND THE MAN

4th Dimension software is rapidly becoming the game software house for the Arc, with yet another Arc release landing on my desk this week.

Man at Arms has nothing to do with *He-Man*, but is in fact a cross between *Barbarian* and *Repton*. You control an underdressed superhero who has to hack and thrust his way through a series of castles in search of glittering fame, elusive treasure and the address of a good tailor.

As you go, you'll encounter boulders, barrels, snakes, jailers, portculli (portcullises, surely?) and have to come to terms with their various properties, none of them nice.

The game is mainly strategy, though you can also attack the baddies, including boulders, with your broadsword. This adds a novel extension to the old *Repton* and *Xor* formula, as you can now sometimes fight your way out of tight corners.

The game is accompanied by a selection of decent tunes, but the graphics are less exciting and rather let the game down. The hero seems to pussyfoot his way around the castle, and the snakes use a form of locomotion unknown in the rest of the reptilian world.

Not really up to the standards of *E-Type* or *Apocalypse* graphically, it's the gameplay that will make *Man at Arms* a hit. There's certainly plenty to go at here and £19.95 doesn't seem excessive for a quality 'mind-the-blocks' game.

DISK MEMORY

Alex Card, in an interesting letter bemoaning the lack of a games creator on the Arc, asks for brief information on how RISCOS memorises the content of disks. As Alex says, he found it at the least very confusing when he first got his Arc.

The system runs like this. Each time you insert a disk, RISCOS memorises its contents. The system can store up to eight sets of directories like this – on insertion of the ninth unique disk, it dutifully proceeds to forget the contents of the first one.

If you run a program which requires, for instance, a program from the system folder, and one of the previous disks RISCOS has logged contains a copy of that folder, the system asks for it's reinsertion.

When found, RISCOS loads the programs it requires and proceeds with the original program. So although it may seem an arbitrary request, RISCOS is trying to do what you asked with the minimum of fuss.

If you have a twin drive system, it's worthwhile putting a copy of the system folder on the secondary drive and logging it before running programs from your primary drive.

RISCOS will then know where to find the system files when it needs them and won't bother you with disk swaps. You can force RISCOS to forget a particular disk by calling its directory and selecting Dismount from the drive menu.

Bertrum Carrot

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CHIP ON MY SHOULDER?

Isn't chip RAM a pain in the posterior! Even if you've got the very latest Amiga 2000 with the fastest hard drive under the sun and 8Mb of fast RAM, you'll soon come to realise that the one thing holding you back from serious multi-tasking is that old friend, the chip RAM limit.

On current Amigas, chip RAM is limited to a pathetic 512K of RAM which is about as useful as a hair dryer in a hurricane. OK, if you're running applications such as word processors etc, then they'll function in fast RAM, but start using programs such as *Professional Page* and *Deluxe Paint* together and you're asking for trouble.

Even with the new ECS Agnus, which offers 1Mb of chip RAM, that dreaded 'Low Chip RAM' warning crops up all too frequently. Wouldn't it be nice if the concept of chip RAM was dropped altogether and the graphics power of your Amiga was limited only by available memory?

A3000 users will be a little nearer the goal with 2Mb Agnus chips, but even this isn't going far enough. So come on Commodore, let's see custom chips that address the entire memory map!

PERFECT PROSE

Anyone remember the Amiga version of *WordPerfect*? Pretty dire, wasn't it? Although many ex-PC users swore by the program, it failed to excite the Amiga market. (It failed to excite me, anyway).

OK, those who previously used the program on the PC went out and bought it just because it was *WordPerfect*, but most of us continued using far superior (and cheaper) products such as Arnor's *Protext* (which I swear by).

Poor sales and an alarmingly high rate of piracy almost killed the Amiga version dead in its tracks when the *WordPerfect* corporation in the States announced that it was to cease development of future *WordPerfect* products for the Amiga (are you listening, Pirates?). After getting a damned good ear-bashing from users, however, the company finally backed down and promised to keep a minimal number of Amiga programmers in its employ to maintain the current release.

Sounds pretty good until you realise that the WordPerfect Corporation certainly wasn't doing us any favours. While we continued to suffer version 4.1 of *WordPerfect*, PC and Mac users were happily word processing with the latest (and far superior) release, known as version 5.1.

The good news is that once again those nice people at the WordPerfect Corporation have listened to what the users want and have promised to produce an Amiga version of *WordPerfect* 5.1. This latest release boasts a far superior user interface that could actually make *WordPerfect* useable (I kid you not). The company hopes to have this new release available this year.

AMOS AT LAST!

Well, it's time to eat humble pie and admit that I didn't actually get time to do as I had wished – I have yet to complete a thorough analysis of AMOS. However, just to keep you going until next week's *Express* (which definitely will have a complete review), I thought you might like to read a little bit about what you'll be getting for your £50. Next week I'll be taking a look at the AMOS system itself, so stay tuned.

Thanks to the lads at Mandarin, I've been tinkering away with beta test versions of AMOS for a number of months now, but I've finally got my hands on the final version, complete with manual and flashy packaging.

The AMOS package consists of two disks, a number of utility programs (sprite editor, sprite grabber, environment editor, map editor, etc) and four complete games. The games consist of *Amosteroids* (no prizes for guessing that this is an *Asteroids* clone), *Magic Forest* (a rather nicely done platform and ladders game), *Dark Castle* (a graphical adventure – proving that AMOS isn't just designed to produce arcade games) and *Frog Leap* (a fun little educational program from Database's *Fun School* series).

The AMOS manual is one of the best I've seen, and it consists of over 400 information-packed pages of text. Indeed, to help you get the hang of AMOS's powerful commands, the manual includes example programs for nearly every major command (all of which are included on the AMOS distribution disks to save the old typing fingers).

AMOS – THE FUTURE

On the subject of AMOS (which I appear to be on rather frequently), you'll be pleased to hear that the compiler is coming along quite nicely. According to Mandarin, Francois has already started work on this all-important utility and it should be finished in time for a September release (but we have heard that one before).

Also up and coming for a September release is the first of many AMOS language extensions, AMOS 3D. With AMOS 3D, you'll be able to design solid 3D objects and spin them in realtime. Mandarin claims that the package will allow you to produce *StarGlider*-type games with ease.

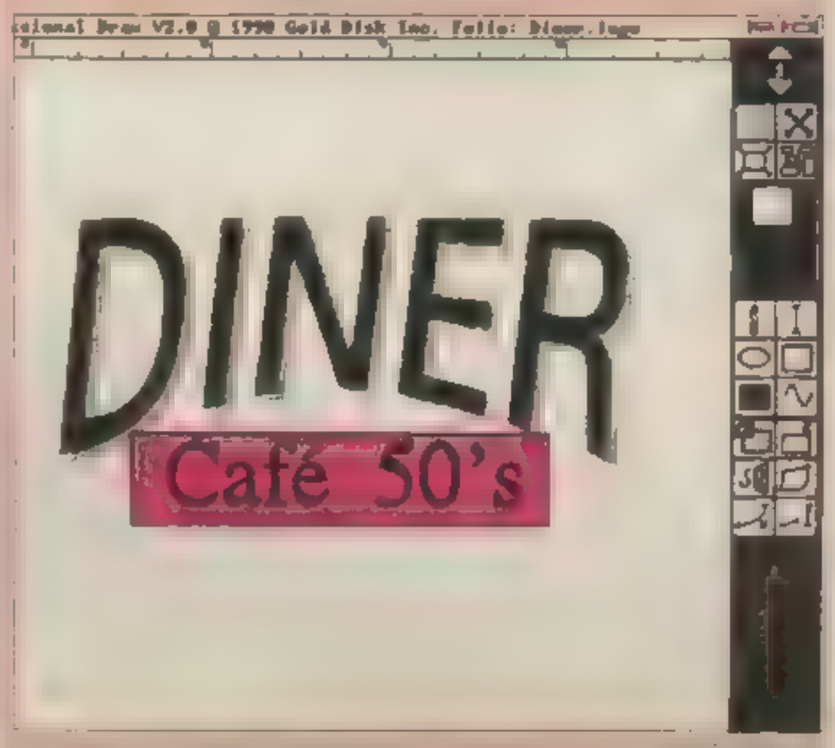
The package has been put together by Voodoo Software, developers of the 3D game *Xiphos* for Electronic Zoo. The routines, which took Voodoo over six months to develop, are backed up by a sophisticated 3D object editor which will allow you to create complex 3D objects with ease.

Although the 3D extension is completely finished, the object editor is yet to be written (once again, AMOS will be handling this task as the editor will be written in AMOS).

Meanwhile, Stephen Hill (writer of the AMOS manual) is hard at work producing an AMOS version of his well received *STOS Game Maker*'s Manual. Although the book is based around the ST original, it offers many new sections devoted to the extra power of AMOS. Once again, look out for that one later in the year.

Jason Holborn

PRIZE DRAW



Gold Disk has finally released the upgrade to the highly-regarded structured drawing tool, *Professional Draw*. *Pro Draw 2* supports powerful colour blending options, text distortion and the ability to align text with curves. Check out next week's *Express* for an in-depth review of this power-packed package. Meanwhile, here's a piccy to whet your appetite.

KLAX

AMIGA GAME of the WEEK

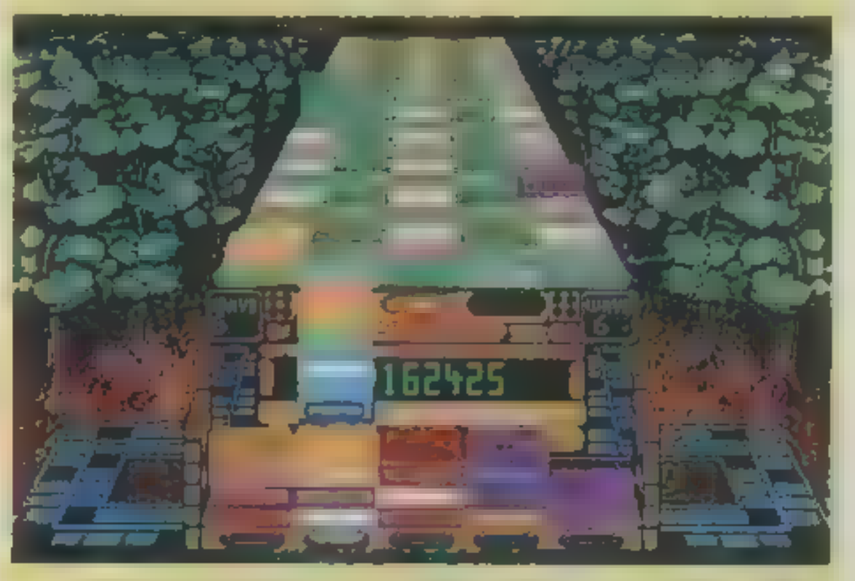
Domark • £14.99

Tetris proved that simple puzzle games are incredibly playable. Atari noticed this too, and released the superb arcade game *Klax*.

The concept is simple. Coloured tiles roll along a conveyor belt towards you and you sit at the end with a paddle to catch the tiles. Once a tile has been caught, pressing the fire button causes it to be dropped into a grid.

The aim is to get the tiles that mount up in the grid to form lines of at least three tiles of the same colour (*Connect Four* style), either diagonally, horizontally or vertically – a Klax. Each wave has a different objective – either completing a set number of Klaxes, surviving a certain number of tiles or reaching a target score. As the game progresses, the waves set harder and harder limits, pushing your reactions to the limit. Flashing 'wild' tiles make the going a little easier at times, as they can be dropped into the grid in place of any colour – useful for getting out of tight scrapes!

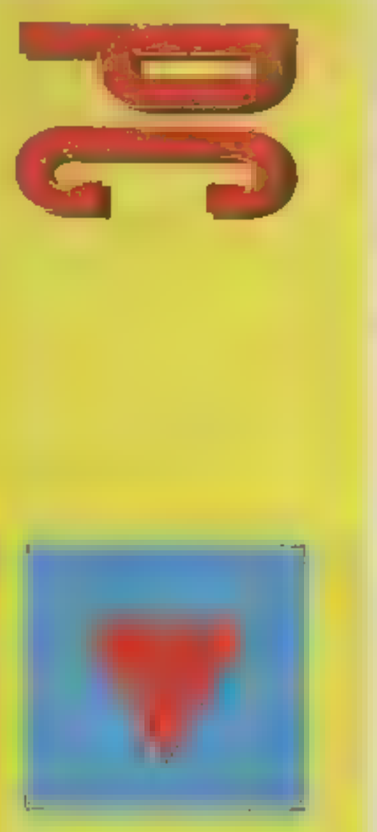
Occasionally, a special 'Warp Wave' appears. As well as setting a task, these waves can be completed by building a 5x5 'X' in the grid, which will warp you to a higher level.



Despite the simplicity of the plot, *Klax* is by no means boring. Describing the gameplay belies the incredible adiction that *Klax* contains. Tengen's conversion of the Atari coin op has managed to faithfully reproduce the atmosphere that made the original such a hit. The graphics and sound are almost identical, from the rolling tiles and colourful backgrounds right down to the female voice announcing the type of wave and the applause on completing a task.

Beneath the attractive appearance, lies one of those games that will have you losing sleep until you've 'just beaten that next wave' – which somehow always manages to turn into about 15 waves! But even as dawn breaks the next day, you'll still be sitting in front of the monitor with your eyes going squiffy and seeing flipping tiles wherever you look. But just start playing *Klax* and you'll realise that it's worth the risk!

Maff Evans



OVER THE POINTS

A big, bright green, heavy oblong box came my way this week. It housed a product which I saw running on several PCs ■ Locomotive's offices last summer, and which must have one of the highest pound for pound ratios of any new software package to arrive this year. Three substantial ring-bound manuals, a paperback printer reference, an installation guide and a poster, together with four 5.25-inch and two 3.5-inch disks, costs just under the magic century – £100.

The product is the long-awaited PC version of *LocoScript*, the word processor which shot to fame on the Amstrad PCW. ■ you've never used *LocoScript*, but have tried other PC word processors, you'll find it quite different in operation. It is very much a dedicated word processor spliced on to your machine. ■ has always majored on ease of use and precise control of printed output. To this extent, printer drivers are copied from the master disk and then 'integrated' into the program.

When I saw it running last summer – on several PCs – the editor was running on one, the file manager on another and the mail merge database on a third. It was a relief to find that the finished program needs just the one machine.

I have not really had a chance to use the program in anger yet, so will return ■ it at a later date with more comments, but if the installation ■ anything to go by, it will follow Locomotive's meticulous attention ■ detail. As you install the disks, each ■ verified before files are copied across. Put the wrong disk in and you're presented with an alert box politely suggesting that you replace it with the right one.

Once installed, and with a printer integrated, you can start to work through the package's many features. As well as being a full-function word processor, it has an 80,000 word spell checker – UK English of course – a flexible built-in database where you can change most aspects of a card on the fly, and ■ pretty comprehensive database language for producing complete, semi-automated applications.

• **Locoscript PC is reviewed on page 53.**

NEWS FROM BATPUGMAN

I had a letter from David Bolton of the British All Turbo Pascal Users Group this week. The group has been going for about nine months and has around 150 members. It publishes a quarterly journal and offers 600K of archived software and utilities when you pay your £10 membership (£12.50 outside the UK).

David also claims the routines include a fix for the version 4.0 – and above – Turbo print unit problem. His letter states "Borland's printer unit will not pass the ú26 character to the printer". ■ seems to have trouble with the '#' character, as well.

BATPUG is also publishing *Fastkit*, over 100 routines for Turbo ■ £24.95. The interesting thing about *Fastkit* is that all but two of the routines are written in assembler, for speed!

OS/2 IN PARADISE

Software Paradise has more catalogues than Damart Thermaware, with sexier products. The latest lists over 10,000 separate items.

Also received recently from sunny Caerphilly ■ a separate list of some exciting OS/2 products. Since my humble 2Mb 386 can't really do anything with OS/2, I can't comment ■ the products themselves. ■ you and yours can do more with it, or you want more details of any of the 10,000 other products, ring Software Paradise on 0222 887521.

SYCERO DB AND C

The *dBase* language has spawned all kinds of clones, add-ons and compilers, but one of the best code generators, according to a friend who does a lot of *dBase* programming, is *Sycero dB*.

A new version of this is out now, along with *Sycero C*, a product which does much the same as *Sycero dB*, but produces C source code, rather than *dBase*. The code produced can be compiled with Microsoft or Turbo C and produces object code shorter and faster than the *dBase* version: sounds good. Chase it up through your dealer – though bear in mind it's not cheap.

GOING UP

If you have an ageing XT and are thinking of upgrading, bear in mind you may be able to revamp it's innards rather than selling and buying again. The easiest way is to buy an 80286 mother board. If you're lucky, this cost you as little as £209 for the AT board itself. It's possible to use all expansion cards, the XT's power supply and even its memory, though this approach will probably not give you the best performance. It's also dependent on the XT you have.

Amstrad PCs are out, as are some of Commodore's range, as they have non-standard main boards which can't be swapped for a standard AT board. Most other makes will have a standard XT-sized motherboard, though, and there are plenty of replacement AT boards which will just screw in in their places.

Some of the recent XT clones, built in the last two to three years, are quite likely to have power supplies rated at 150W or over. This will be adequate for a typical 80286 configuration. If the RAM has an access time of 100ns or less and is mounted in the right form of chip, it may be usable too.

The last items which need to be checked are the floppy and hard disks and their controller. Again it is possible to use these on an upgraded machine, assuming you can set the CMOS configuration information to 'nothing installed'.

When booting up, the machine will then go to the BIOS for its configuration, if it can't find what it needs in the CMOS. What you're losing is some of the improved performance, as all your peripherals are forced to work through their 8-bit buses rather than the 16-bit bus of the AT.

The best bet is to fork out a bit more and do the job properly. How about £190 for a 12MHz 80286 motherboard, £95 for 1Mb of 80-100ns RAM, £90 for a 16-bit hard and floppy disk controller and £45 for ■ 150W PSU.

By the way, this lot comes to £420, or £483, including VAT – less than half the cost of a new AT.

These prices and most of the information come from Datamation Services, which supplies high quality kit that I can vouch for, having owned one of the good people's 386 machines for over ■ year now, with nothing but the best of results.

At any rate, you can give Datamation a buzz on 0753 696499 if you have any further queries.

Simon Williams

VIRUS BUSTERS

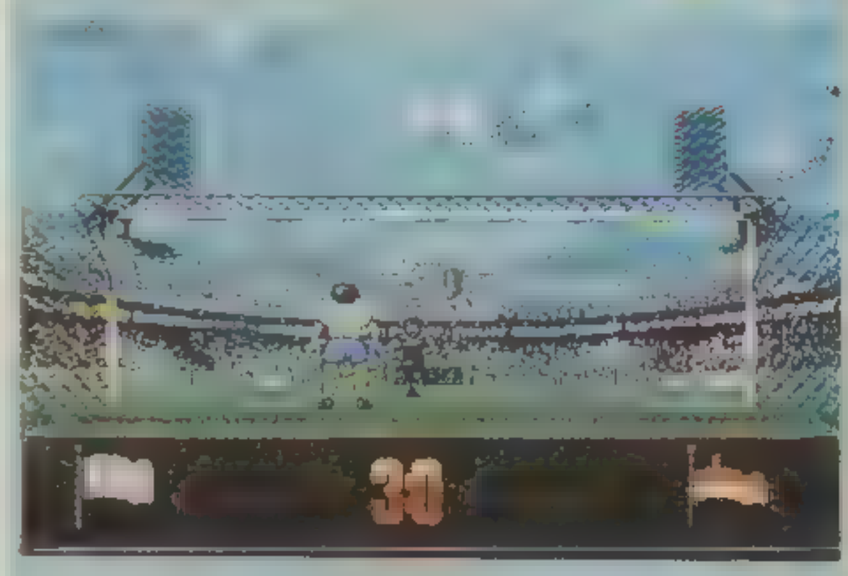
A new anti-virus product, *Eliminator* claims to remove and guard against all known boot sector and parasitic viruses. The product is in fact two utilities working in tandem. One cleans the disk of viruses while the other remains resident and checks for viruses as different software is run. This all seems very virtuous and at £90.85 not too expensive.

The £50 per quarter update fee seems a trifle steep, however, and I hope that *Eliminator* disks work in a more conventional fashion than the publicity photo would suggest. It would seem counter-productive to have to blast a PC's floppy drive and multi-function card with laser beams to remove a virus!

WORLD CUP '90

PC GAME OF THE WEEK

Virgin Games • £24.99



Yes, it really has been four years since Argentina took the World Cup after beating West Germany 3-2 in what must have been one of the greatest games in history. This time Italy is the host and, as usual, the world prepares to cash in on the hype and jive.

If you haven't read it elsewhere, you can expect a rash of football simulations over the coming months – someone is even producing joysticks done up in the colours of your favourite team.

***World Cup Soccer* '90 has been licensed by Olivetti, official supplier to Italia '90, and carries the 'Official Game' sticker. This is very much a World Cup rather than a football simulation – it includes a wall chart for you to fill out the results as each match happens and a potted history going right back to 1904.**

Play takes you through the whole World Cup tournament, game by game. You control one of the men on the field, with the others able to tackle, dribble and pass under the computer's control.

If your side has the ball a press of the fire button puts you in full control of the main man, although if left to its own devices the computer can do a fairly good job while your player runs up the field to a more tactical position.

If the other side has the ball the fire button takes you to your nearest man, and another press starts him tackling. Be careful though, as if you trip or push the referee might award a free kick.

As a single-player game the lack of tactical control makes it a bit boring, although matches do get progressively more difficult. *World Cup Soccer* '90 has an added two-player option, however, and thanks to the high score being saved between games, up to four people can compete in a championship play off.

The graphics are not bad either, right down to the referee who for some reason throws his voice over his right shoulder out of the corner of his mouth. Perhaps he's a bit shy.

Matt Nicholson

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MAN. TALLY	MT 81	130/26	104
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24 PIN 80 COLUMN			
STAR	LC24-10	170/57	195
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CITIZEN	PRODOT 24	200/60	369
PANASONIC	KXP 1124	192/63	219
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MONO VGA	SAMSUNG	ML 2611	12"	
MONO VGA	SAMSUNG	ML 4571	12"	95
MONO A4 (includes card and software)	SAMSUNG	MP 5671	A4	634
CGA	PHILIPS	CM 8833	14"	199
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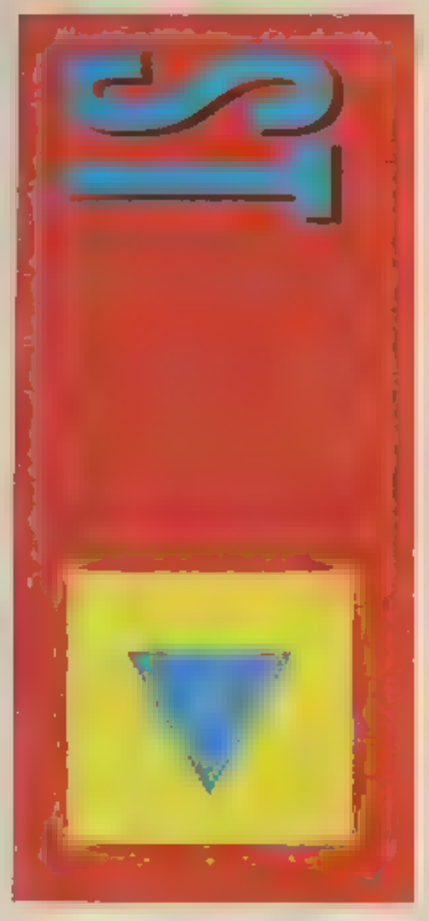

ATARI 90s SHOW: FULL REPORT

Atari's Novotel get-together, the company's first effort ■ organising its own summer show, proved a great success and offered excellent value for money. With a lower level dedicated to bargains and games, and an upper floor showing off Atari's business side, there was much to absorb and much in prospect for the remainder of 1990 and beyond.

There were no new machines launched – apart from a 386 PC – but the show did offer up a sense that the cornerstones to the foundations of the ST's future were being laid, or at least quarried. With more or less compatible machines at £299 (520ST), £399 (520STE), £499 (1040STE) and upwards to the increasingly tired-looking Mega range, coupled with ■ new and exciting TT range (£1,995), it appears that Atari has packed into its ST the basis of a complete array, from entry-level to high-end education/business machines.

Asked about the fate of the Mega ST range, Atari UK Managing Director Bob Gleadow was keen to make it clear that machines were still available, even if ■ short supply. To the independent observer it does appear that the Mega ■ being squeezed on price and performance from both sides – by the STE and the TT. Atari's long term plan for the Mega is a matter for speculation.

BACK ON COURSE

The mood from Atari was very much one of sleeves rolled up and of re-dedication to the ST range. At a press conference held on the Friday morning Gleadow was keen to stress that Atari knew it had slipped off the rails, but was now back on course. Atari's poor financial showing in 1989, he said, was due to a single mistake – but ■ very big one: the purchase ■ the States of the Federated retail group.

Folks at Atari would like to the company to become a billion dollar enterprise, and the completion of the unwinding of Federated earlier this year means that this ambition is perhaps achievable by 1994.

In the UK, Gleadow said, Atari aims to double the present £50m level of turnover by 1994. A massive contribution will be made by the Lynx hand-held games console, he predicted, with sales totalling £20m in the machine's first full year (ie 1991).

Furthermore, business systems are expected to show enormous growth, while Atari's backbone, the ST range, sparks new interest. At present this latter mainstay accounts for a huge 69 per cent of Atari UK's turnover, and Gleadow expects an additional 30 per cent of sales volume in the next four years, mainly at the expense of older 8-bit machines. He stressed Atari's intention to maintain compatibility and its commitment to the much-vaunted Motorola chip technology.

Gleadow went on to echo a claim that the company was now taking a more conservative approach to new product announcements. Hitherto Atari has considered leaks, hints, nods and winks as a valuable and cheap source of market research: 'You like this? No? What about this? You do? Great!' This will be the case no more: trade secret freebies are out.

TOMORROW'S ST TODAY?

As for the new 68030 TT machine, price and availability were announced as £2,294.25 including VAT and ready for June. (Initially Gleadow offered the figure 1995, which was taken by some to refer to price, and by others, more cynically, to refer to availability.) Atari's problem with the TT to date is in establishing a direct dealer base.

NEW PACK FOR PORTABLE

Stacy, Atari's portable ST, which is very sexy if a little overweight and short on energy (know the feeling), is now expected to get a new battery pack with a life of four hours plus; the pack should arrive in September. Gleadow hoped, but could not promise, that this new device could be fitted to machines already purchased with the present one-hour pack.

CD TECHNOLOGY DOWNPLAYED

Gleadow was keen to play down speculation about the much-talked about CD-ROM machine, which still lacks software support. The Slough warehouse had ■ pile of the things, he said, and had done so for 10 months: "Anyone who wants ■ buy one, boy do I have a deal for you!" he joked. In fact the price remains the same, at £399. The only software available so far, he revealed, was the Swiss phone directory and the spare parts catalogue for the Boeing 747!

Gleadow dismissed rumours that Atari was actively pursuing an integrated CD/ST unit. Atari's television/video recorder integrated mechanism had failed, he pointed out, because people don't replace the one ■ the same time as the other. ■ the CD unit was to sell it would sell as a peripheral.

As for multimedia, Gleadow stated that it was, like DTP three years ago, an "immature concept".

NEW PRODUCTS AND PREVIEWS

So much for the ST news from Atari itself. For most of us, however, the show was all about what could be seen, handled and – at least on the lower floor – bought. "Most impressive stand award" undoubtedly went to the Signa pantechnicon, a massive networked collection of STs all linked to a Linotype machine using Signa's own Bionet 100 network system.

Signa now claims to have over 100 clients using its DTP Linotype bureau to produce high resolution printouts of *Calamus* documents, and Signa boss Mike Date estimated that some 2,500 pages were being processed each month.

Also on show at the Signa stand was *Chilli*, an extraordinary new German desktop video software/board package. The intention is to offer graphic artists an affordable desktop system, thereby eliminating the present dependence on systems such as Quantel Paintbox. The cheaper system (we are speaking in relative terms: £1,700 is cheap in this market) was suitable for non-broadcast uses – such as corporate video.

A broadcast-quality version is also being made available, offering resolution twice 'junior' standard. Both offer a fantastic range of options, including: titling (GDOS fonts only, though *Calamus* compatibility is expected); slide show; charts; and built-in genlock to enable overlapping/editing from video grabs.

Rombo ■ surfacing with Videochrome ST, the colour option for its digitiser VIDI ST. Some time ago the programming team engaged to complete the project dropped out, leaving Rombo to tread water. Through a diligent flexing of managerial acumen, the project was brought back onstream with results: the software-plus-three-filter £20 package ■ due by September. Furthermore, a software driver for an ST RGB splitter is expected in a month or so – to be offered at £70.

Steve Carey

DRAGON'S LAIR

ST GAME of the WEEK

ReadySoft/EI • £44.95

Dragon's Lair was originally released on other formats over a year ago but it's taken so long to make it onto the ST that it's since been beaten by the sequel – *Space Ace*. Ignoring the incredible graphics and sound effects, there's very little difference between the two games.

You control Dirk the Daring, directing him through a series of levels in a desperate bid ■ rescue the beautiful maiden. When *Dragon's Lair* starts, you're staring at the castle gates and your first obstacle is to cross the bridge.

Dirk charges across the wooden drawbridge but as he gets halfway he falls through a hole. A group of green tentacles sweep out of the water. This is where you're suddenly involved in the action.

You now need to make two joystick moves to finish the level – tap on the fire button and push up. Not exactly gripping interactive stuff but if you're looking for a good demo of your ST's abilities, it's unbeatable.

The game can be played on any ST and is arranged on six double-sided disks. Due to the formatting of the disks, single-sided owners can

only play half ■ the sequences but that's not much of a problem because many ■ the scenes in *Dragons Lair* are simply mirror images of earlier ones. This means that the combination of joystick moves required to complete the scene are identical but in reverse. It's an unfortunate approach because it means there is even less excitement than in *Space Ace*.

Last month we criticised *Space Ace* for its lack of playability and there are no improvements in *Dragon's Lair*. If anything, there are even fewer joystick moves required to complete the challenge. Fortunately, Readysoft have maintained the save game feature, enabling you to complete the game without having to constantly replay old screens.

There were rumours that EI were looking at dropping the price by ■ but unfortunately that idea was abandoned. As a result, you end up paying an exorbitant price for a game which is little more than a cartoon with virtually non-existant player-interaction. Nevertheless, the visuals and sound effects are stupefying, once again proving that with the right skills, there's nothing your ST cannot do.

Mark Higham

BEST

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SHOPPING EXPRESS

The *weekly* computer market place for people *serious* about buying

THIS WEEK'S BUYERS' GUIDE

ST ESSENTIAL SOFTWARE

Comprehensive guide to the vital software for the 520, 1040 and Mega STs

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1.44Mb 3 ½" Floppy Drive £85

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THE SHOPPING EXPRESS BUYER'S GUIDE TO

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The ST is a remarkable machine – blessed with an excellent range and variety of both serious and leisure software. And all at a price that's a giveaway for such ■ powerful, 16-bit beast. Its different resolutions allow it to support everything from precision DTP to multi-colour artistic extravaganzas.

The Express Guide to ST essentials takes you through the best products available in the wide world of ST software: the word processors that can handle everything from business letters to a complex cross-referenced thesis; the databases to keep those club or customer records; spreadsheets that solve those financial crises; music packages that make the ST the choice of the professional muso; games that take over your life; graphics packages that make you machine ■ desktop publishing tool. Now read on...

WORD PROCESSORS

● 1ST WORD PLUS
Electric Distribution
0480 496789
£79.95

Enhanced version of *1st Word*, the word processor bundle with the ST, this version is much meatier, can handle *Degas* graphics and comes complete with spell checker, mail merge and multi-column printing

▲ Fast and efficient
▲ Good display

▼ No short cuts to tedious keyboard sequences

● WORD WRITER
Electric Distribution
0480 496789
£79.95

Excellent text handling on a fast WYSIWYG word processor with built-in spell checker, thesaurus, outliner and mail merger. Only problem is with layouts - more than one ■ a document and things get a little hairy!

▲ Lots of great features
▲ Useful outliner included

▼ Layouts restricted

● PROTEXT
Arnor
0733 68909
£99.95
Easily the fast ST word processor – not surprising since it dispenses entirely with GEM – and stands out as fast keyboard driven text processor. Full of features it zips along at an unsurpassed rate

▲ Powerful macros, spell checker and mail merge
▲ Calculator, word count, memory editor

▼ Command driven
▼ No menus
▼ Restricted WYSIWYG

● THAT'S WRITE!
Gasteiner Technologies
081-365 1151
£129

Another powerful non-GEM word processor featuring excellent layout control along with a font designer and screen grabber. Also includes useful functions such as auto indexing, contents generation and hyphen control

▲ Brilliant print-out results
▲ Powerful macro system

▼ No spell check or mail merge

● WORDUP
HB Marketing
0895 444433
£ 59.95

Almost qualifies as a DTP package as it includes graphic import, auto text flow around graphics and loads of different type sizes and styles. Excellent for producing stylish documents

▲ Good control over layout
▲ Quasi-DTP capabilities

▼ No spell checker
▼ Can only print its own fonts

SPREADSHEETS

● K-SPREAD 3
Kuma
07357 4335
£24.95

Good entry level spreadsheet which ■ fully compatible with other programs in the 'K' suite. A powerful Lotus-look-alike using GEM to provide a workspace of 256 columns by 8,192 rows. Many features such as text handling, arithmetic functions make it an excellent all-round business program

▲ Comprehensive low-cost package
▲ Lotus style capability
▲ Good manual

● DIGICALC
Digita International
0395 45059
£39.95

An easy to use spreadsheet which dispenses with GEM to provide a keystroke driven workspace full of popular facilities. 512 columns by 52 rows are supported plus the usual range ■ numeric functions

▲ Fast recalculation
▲ Holds full sheet entirely in memory
▲ User defined macros available

▼ No graphics
▼ No GEM
▼ No comparison functions

● VIP PROFESSIONAL
VIP Technologies
£149.95

A GEM version of VIP on the PC, supporting 8,192 x 256 cells and following the Lotus *1-2-3* industry standard. Fast editing and simple database functions complement a full range of features including keyboard macros

▲ Lotus controls
▲ Acts a simple database
▲ Graphic output

▼ Slow on large spreads

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▲ Exceptionally easy to use
▲ Impressive report facilities

▼ Manual needs a better index

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▲ Excellent DTP at budget price
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Mirrorsoft
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▲ Good clip art selection
▲ Wide file format supported

▼ No automatic reflowing of text
▼ Relatively slow and unfriendly

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▼ Price

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▲ Very powerful animation
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▲ 8 screens available
▲ Powerful block handling

▼ Lacking in features

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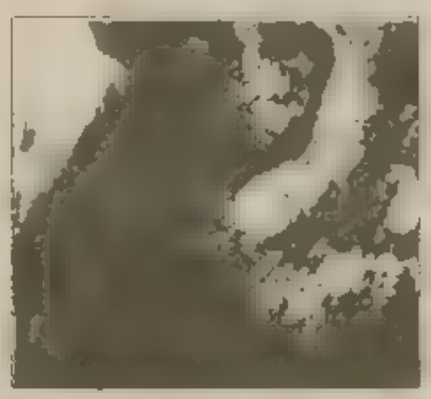

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▼ A little expensive

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▲ Powerful manipulation tools

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▲ Excellent facilities
▲ MIDI file compatibility
▲ Will also adapt to video sync
▲ Good editing

▼ Handbook can be hard to get to grips with
▼ Expensive if you are not serious

● TRACK 24
Comus/Soundbits
021-733 2063
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Well priced budget sequencer with more features than you would expect, rivaling software twice its price. Compatible with their more up-market sequencers and scoring packages.

▲ Cheap
▲ Good sequencing facilities including mixdown
▲ MIDI File

▼ Editing is peculiar

● STEINBERG PRO 24
Eventode
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The has been the industry standard for many upon many years. The soon-to-be-available Amiga version should prove as interesting as the versions previously released on other machine specs. They are pushing their new program 'Cubase' at present, but one should not neglect this easy to use and very popular program. Make sure you get at least version 3 though.

▲ Easy to use
▲ Established program
▲ Easy editing

▼ Price

● VIRTUOSO
The Digital Muse/Audio Software
071-586 3445
£225

A new all British program having its first outing this year. Initial reactions are favourable and it has many things in its favour. It has all the features that are available on much more expensive packages and still remains quite easy and friendly to use.

▲ Very fast – thanks to re-writing of screen management
▲ Very accurate
▲ Can perform disk operations while still running
▲ Many excellent features

▼ New and therefore untested in the general market
▼ Price

● SUPER CONDUCTOR
Microdeal
0726 68020
£49.95

Very popular little sequencer that will also control the ST sound chip. Well thought out, especially in the song arrange section. Can also cope with the fine details of MIDI including systems exclusive editing.

▲ Suitable for beginner
▲ Easy arrange section
▲ Well documented
▲ Controls internal sound chip
▲ Good if you want to control MIDI via data

▼ Editing not too easy
▼ Quantize limited

● EZ TRACK PLUS
Syndromic Music
081-444 9126
£49.95

Reasonable sequencer that is fairly easy to use. Compatible with other Hybrid Arts programs that also boast a multi program environment. Limited on quantizing but not bad for the money. Editing in data only but good for organising songs.

▲ Good price
▲ Easy to use

▲ Compatible with Hybrid Arts Score
▼ Limited on editing and quantizing

● REPLAY 4
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£59.95

One of the first sampling packages now in its fourth version. Earlier versions available on public domain as sample players only. MIDI well looked after.

▲ Editing very easy
▲ Samples sound very clean
▲ Tried and tested program

▼ The ST is not the best sample player.

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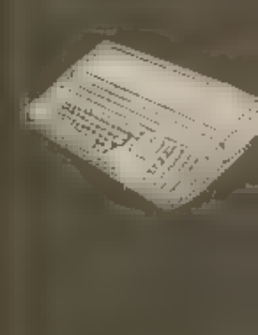

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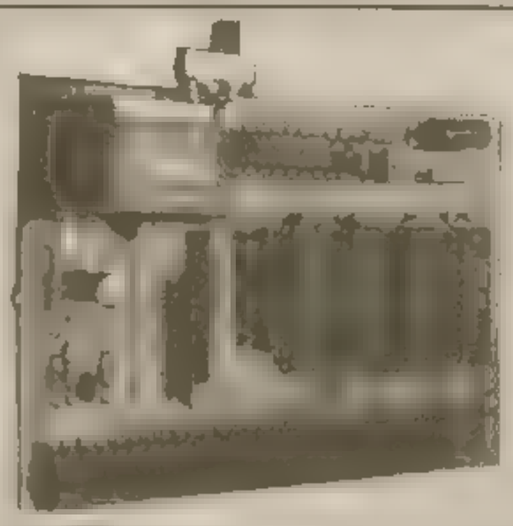

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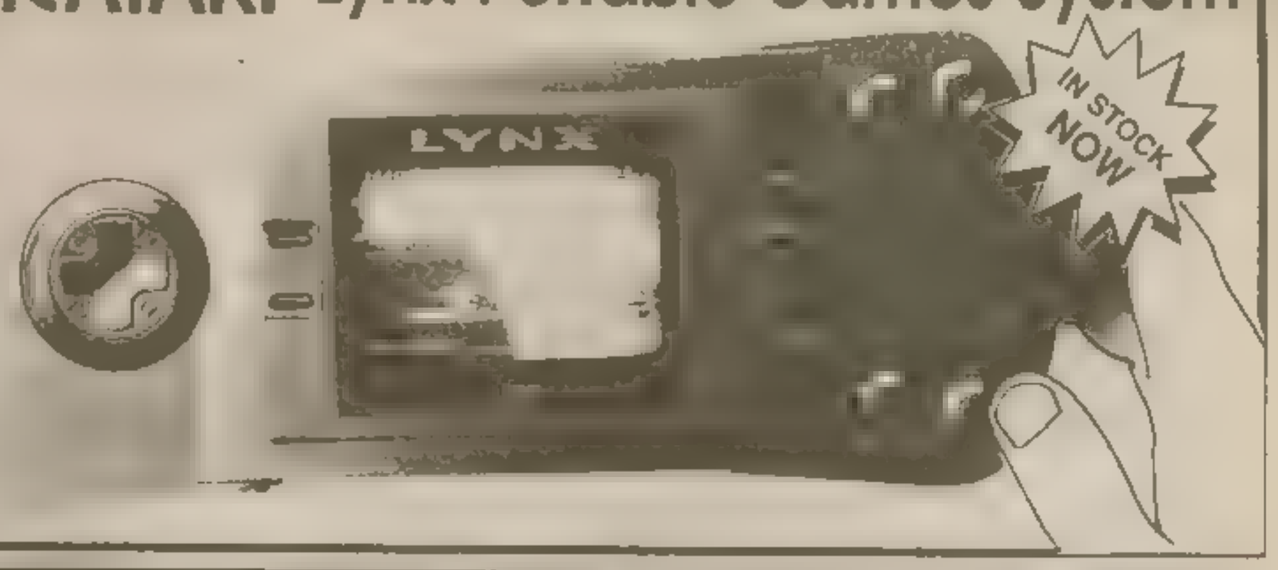

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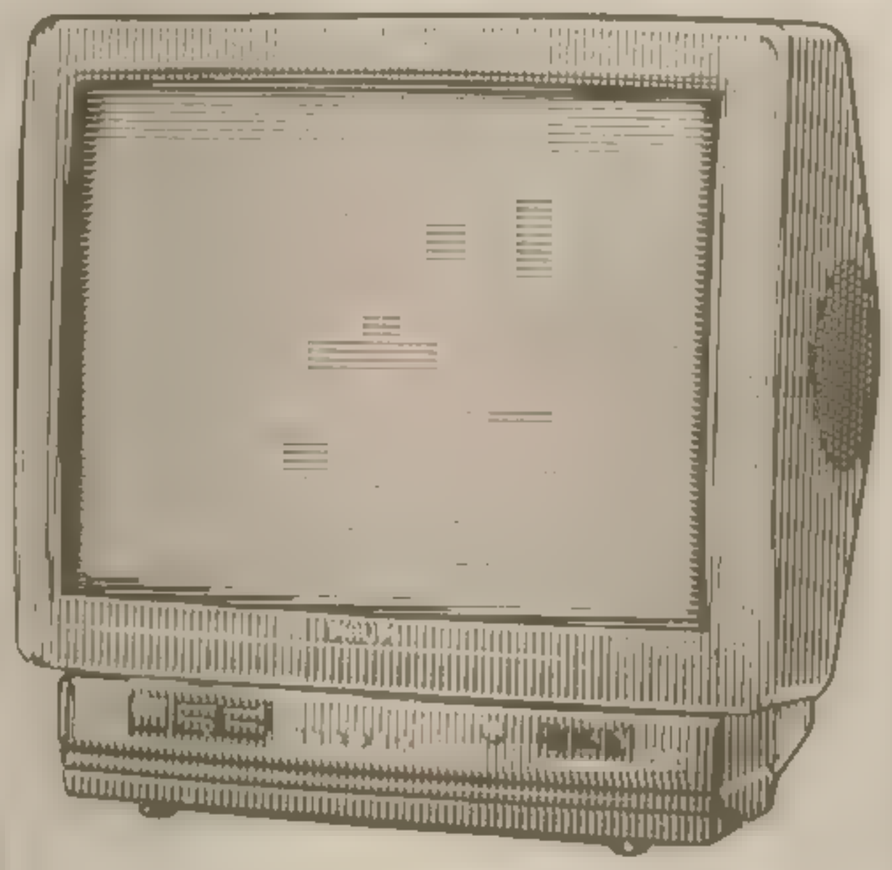

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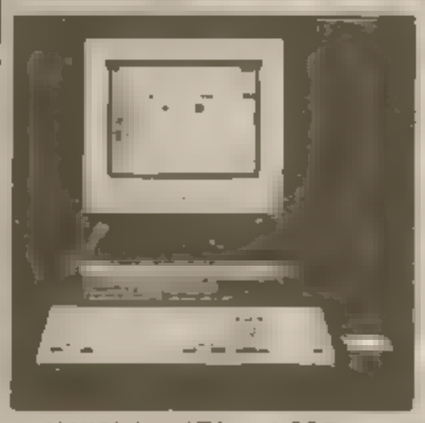

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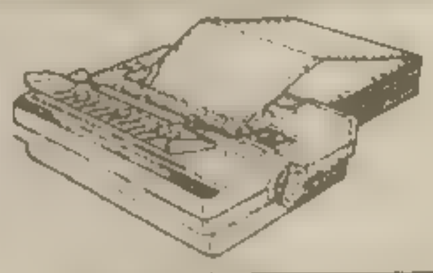

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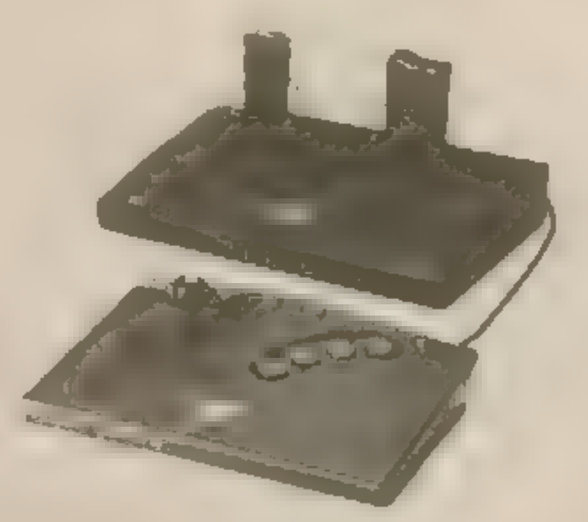

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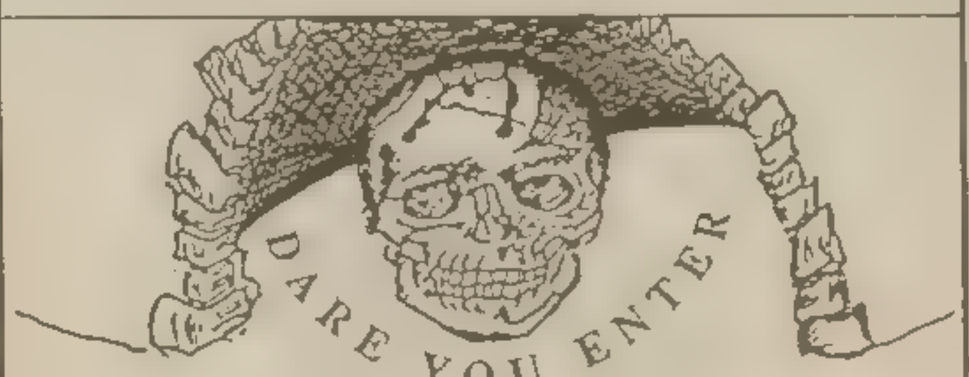

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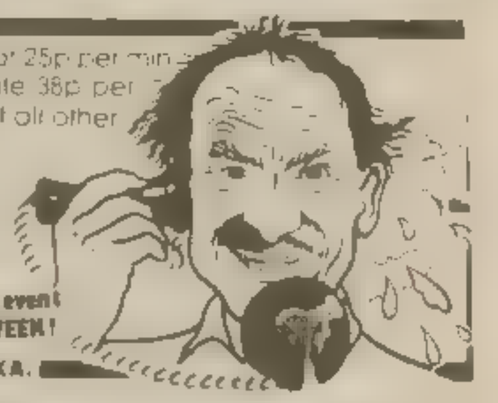

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THE PD COLUMN

There is a lot of software out there available for the price of a disk. This week Keith Pomfret looks at some of the software for the ST and PC compatibles you can find in the libraries.

A letter to the *Express* techie mailbag asked: "Where do I go when the local computer shop informs me that my computer/software/ideas etc. are out of date and they are no longer supported." For instance the Epsonasonic Daisy-laser doesn't seem like such a good idea when there's no printer driver to weld it to some document processing application.

But the laws of probability tell us that whatever we want to do, someone has already done. Someone, somewhere, must have found a way of making the Epsonasonic chug happily along or there'd be great piles of them at every jumble sale.

SEEK AND...

The simple fact is that there's a lot of useful software sitting in the public domain that people never think to look at because it never occurs to them that it might be useful.

Back in the early days, PD was looked on as some sort of untidy corner occupied by enthusiasts. The programs were unpredictable, unreliable and the documentation non-existent.

Things have changed and with PD software writers and libraries appearing on an almost weekly basis, the choice is good and the competition rife.

BEWARE SOFT GROUND

With all this software available, it would be easy to get bogged down in a sea of routines and utilities. It's necessary to be discerning when you shop. As an established PD librarian said, it's a strange business where someone can buy your entire catalogue, copy it and set up in business against you. Thankfully there aren't many cowboys and the established PD libraries are generally very helpful and knowledgeable.

If in doubt, ask how long the library has been established and try to ask a few pertinent questions about the sort of program you are buying.

There will normally be a document file on the disk, but if the person selling it to you can describe its functions, there's a good chance that that person will be able to offer you some support later if you have a problem. Don't be put off by 'it's on the disk', insist on some description. It is a buyer's market and if one library can't offer the help you need, there will be another one who can.

TRY BEFORE YOU BUY

With the advent of cover disks on computer magazines, many software publishers realised that by releasing rolling demos of their commercial packages into the public domain, they could attract users by giving them an opportunity to get the feel of the package and see what it looks like before they commit their hard-earned cash to it.

PD libraries were notslow to realise the advantages of carrying commercial demos, and most of them have some examples of the genre in their PD disk collections.

NOTTINGHAM LACE

The ST Club based in Nottingham has a varied collection of commercial demos with something available for everyone. The youngsters are catered for with a *Fun School 2* demo that will be a godsend to parents wondering whether or not this kind of educational software will capture the enthusiasm of their offspring. Still with fun, there is an amusing identikit program called *Fun Face*. In the demo version it won't load or save but still gives a full flavour of the program's possibilities.

Those who want to plan their route and are prepared to stay in the south east will be grateful for the *Autoroute*

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demo which is a fully-featured version of the route planning road atlas on ■ disk, but limited to a small area in the south east.

To keep track of what's going on in foreign parts, there is a German art package, CAD from Holland, and many other utilities from beyond the Channel.

LITTLE GEMS

The ST's GEM environment is well catered for with an enhanced desktop and several demonstration word processors with GEM fonts. The only things missing are the print and save options

As well as commercial demos, the ST Club has software in all categories. The more adventurous may want to opt for communications software so that they can go and trawl bulletin boards for free downloads at will. It's not as free as it sounds though, even at a fast download speed (2,400 baud) it could take over half an hour to download a disk full of software. In terms ■ your phone bill, it might be cheaper to buy the disks from a library.

The ST Club ■ at 49 Stoney Street, Nottingham, telephone 0602 410241.

ST MUSIC AND MIDI

Most ST libraries carry a lot of music and MIDI software When the ST was designed, the inclusion of built-in MIDI ports made it the obvious choice for many a musician. A quick look in the catalogue ■ the Goodman PD library revealed all manner of sequencers toolboxes and editors.

The famous *Waddington Sequencer*, a Canadian offering, is bundled on a disk with a French PD program called *Staccato*. This uses the somewhat limited internal sound chip of the ST to produce some surprisingly pleasant results. For anyone with a limited budget this is a good jumping off point as *Staccato* doesn't need any external additions, but when cash flows more freely, there's the *Waddington* to drive all the MIDI kit.

EDITORIAL

As well as sequencers and tune building utilities, there are voice editors and instrument parameter editors. Most popular of these are the ones for the cheap and popular Casio CZ range of polyphonic synthesisers.

One of the problems with these synthesisers is that all the sound and data editing has to be done through an LCD window not much bigger than a calculator By using editors on the ST, a full screen display can be used and an overview of the editing picture can be seen.

As well as the Casio CZ, there are editing programs for various other synthesisers including the Yamaha DX7, the industry standard poly-synth. There are running demos ■ commercial software including the famous *Steinberg Pro-24* and *MasterTracks Pro*.

S-S-SAMPLING

On a lighter note there are digital samples of various stars including Kate Bush, Peter Gabriel and Pepsi and Shirley, and one of sound effects from *Star Trek*.

To complete the musical spectrum there are sampled drums and drum kits.

Drums are good to sample because they are short sounds that aren't memory intensive and many can be held in memory at once. This makes for a realistic well featured drum kit sound. Samples don't just have to be musical though. There are disks with sound effects on too

Goodman Enterprises is at ■ Conrad Close, Meir Hay Estate, Longton, Stoke on Trent ST3 1SW, telephone 0782 335650.

PC PLODS

The PC attracts a more serious sort of PD with games taking a back seat to the more 'useful' and businesslike applications. PC clubs and user groups are common and what can be best described as serious professional fanzines exist to service the needs of members While most of these started with PD, many are gravitating toward shareware with its licences and fees.

One group that stands tall in a crowded field is the PC Independent User Group As well as a wide and varied catalogue of useful disks, it runs a bulletin board, helpline and its bimonthly magazine contains over 100 pages of useful articles, descriptions and information on PC-oriented subjects. This user group manages to function as a business while still retaining its friendliness and willingness to help.

Its helpline is on 0732 771512, the bulletin board ■ on 0732 770539. The address is 87 High St. Tonbridge, Kent.

FIRST FOLIO

Another interesting number for PC users is Folio. This is a shareware company but its prices are cheap enough for inclusion here. From £3.50 for a single disk to £47 for ■■ ■ good value and a look ■ its catalogue is worth having for the utilities alone.

Best of all though, it is quietly confident enough to print a guarantee on the first page of the book.

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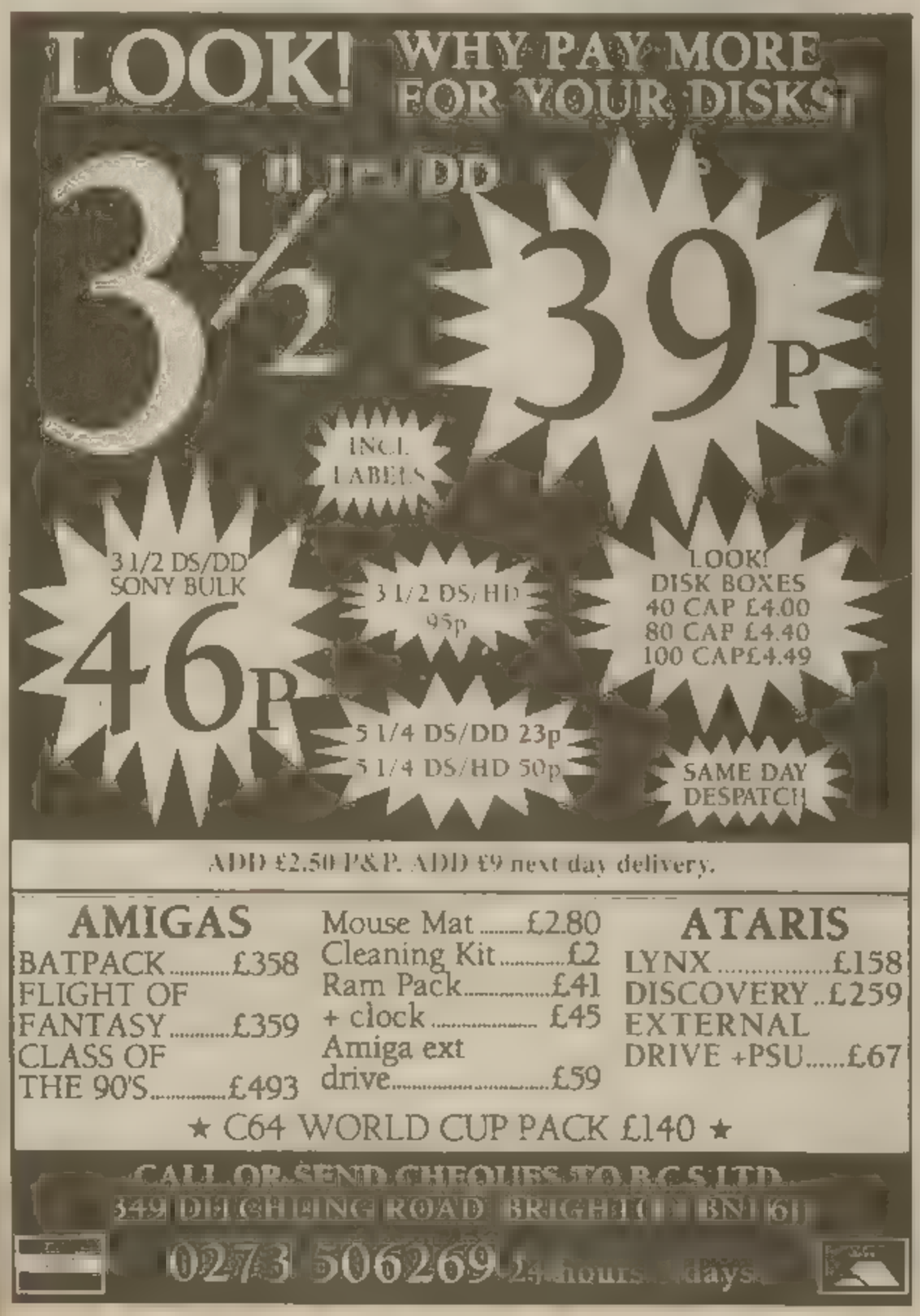

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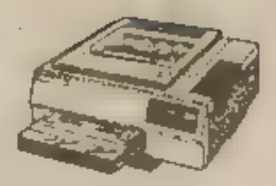

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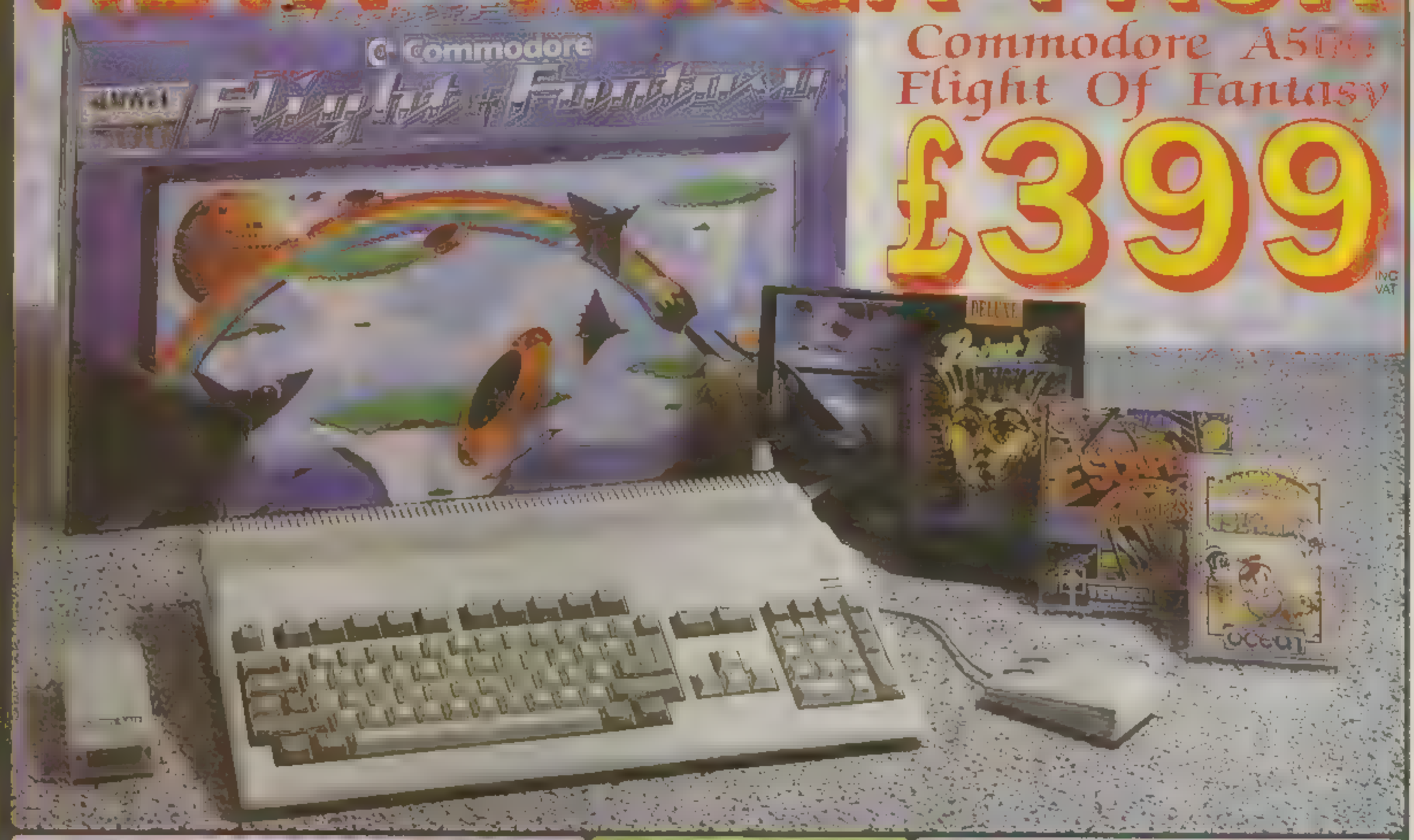

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THE NEXT GENERATION

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The idea of running your micro from a graphical user interface (GUI – pronounced 'gooey') is appealing. Users of the ST, Amiga and Archimedes are all used to this type of interface and the PC has had two contenders for the GUI crown – Windows and GEM. Early support for GEM from Amstrad made it the better-known of the two to home and small-business users, and the mainly text-based interface of Windows 2 also proved less attractive. It was only the release of major applications like *Excel*, *Word* and *PageMaker* and the continuing muscle of Microsoft that swung the balance in Windows's favour.

The new release of the program, Windows 3, is a lot more than a simple upgrade. There are several facets of the new product which radically change its importance as a mediator between programs on the PC. For a start, there's only one product, unlike the earlier Windows range which included Windows, Windows 286 and Windows 386. Windows 3 assesses your PC's configuration during installation – which is a well organised and comparatively simple process – and runs in one of three internal modes.

Real mode, which runs on any 8088 machine with at least 384K of main memory, offers all the facilities of Windows 2 and the new screen presentation of version 3. These include the revamped windows themselves, full-colour icons for programs and accessories, and even the patterned 'wallpaper' backdrops which can be used in place of a grey desktop.

Standard mode is the mode on which Windows 3 was based. It requires an 80286 processor and at least 192K of extended memory. This means it can run on any of the 1Mb ATs which are now flooding the market for around £1,000. All the features of Real mode are carried through to Standard mode with the extra room that extended memory of up to 16Mb offers.

Enhanced mode is for 386 and 486 machines and uses the chips' protected modes to multi-task non-Windows as well as Windows applications, from within windows! It can address up to 4 gigabytes of main memory and can also use up to four times the physical memory on the PC by allocating an area of hard disk storage as 'virtual' memory. This gives a lot of room to play with.

THE SPEED'S THE THING

The first thing you notice about Windows 3 is its speed. Windows 2 was a clumsy beast, but the new system fairly whizzes along. Aldus, which has just released a Windows 3 version of *PageMaker*, claims that it runs up to 50 per cent faster in the new environment. This is

WINDOWS 3 vs PM

A lot of controversy has surrounded Microsoft's development of Windows 3. Most of this comes from the parts of IBM that are dedicated to promoting OS/2 and Presentation Manager as 'the way forward' for serious PC use. From IBM's point of view, there are a number of good reasons for this. The most obvious is that OS/2 PM has file and display compatibility with the company's larger operating systems on its mini and mainframe computers. There are distinct advantages in being able to say 'Put OS/2 and PM on your PCs and all you staff will work with the same interface to their programs. Think of the savings in training costs.'

For you and I, who can't afford the investment in memory and the cost of OS/2 applications, which are still thin on the ground, this argument doesn't hold water.

Most of us are keen to take advantage of the simplicity of use offered by GUIs, but aren't interested in upgrading all our kit just for that advantage. For us, there's now Windows 3, which can run on a very modestly specified PC and migrate with us if and when we decide to upgrade.

There are technical advantages to Presentation Manager, such as micro-threading, which is a more efficient way of multi-tasking than Windows's time scheduling. For most applications, though, Windows 3 offers everything we could possibly ever need, including the ability to run non-Windows applications in their own windows – clever.

mainly due to the better memory management and using the processor in protected mode.

When Windows starts up another change from Windows 2 is equally apparent – gone is the dreadful MS-DOS Executive. Instead a Program Manager displays applications as icons, and related programs can be placed together in groups. If you need to play with disk files directly, a File Manager displays subdirectories and their contents. Copying is as simple as clicking on a file and dragging it to the appropriate directory or disk drive icon. At last an end to COPY *.* A:. You can run an application or batch file by clicking on it, and if Windows can recognise the author of the file from its extension, document files will launch their parent applications too.

A Control Panel gives you total control over the appearance of the screen, printers, the mouse and the other system features. Anyone who has struggled with installing fonts into previous versions of Windows will love the user-friendly way this and other chores are now handled.

GOODIES GALORE

In the Windows 3 package, which comes on five 1.2Mb disks – 3.5-inch and 360K 5.25-inch versions are available – are a number of goodies which may well make the product attractive to hardware suppliers as a bundle. Indeed, over 25 leading manufacturers have already pledged to do just that.

Included as standard are versions of *PC Paintbrush*, *Windows Write*, a card file, comms program, calculator, clock and calendar. There's a macro recorder for speeding keyboard operations, a clipboard for transferring text and graphics from application to application and a notepad for odd jottings. There are also two games, a tough version of reversi and a spectacular patience game with 10 card-back designs. You can do quite a lot with just Windows 3 and nothing else on your machine.

REGISTERING SUPPORT

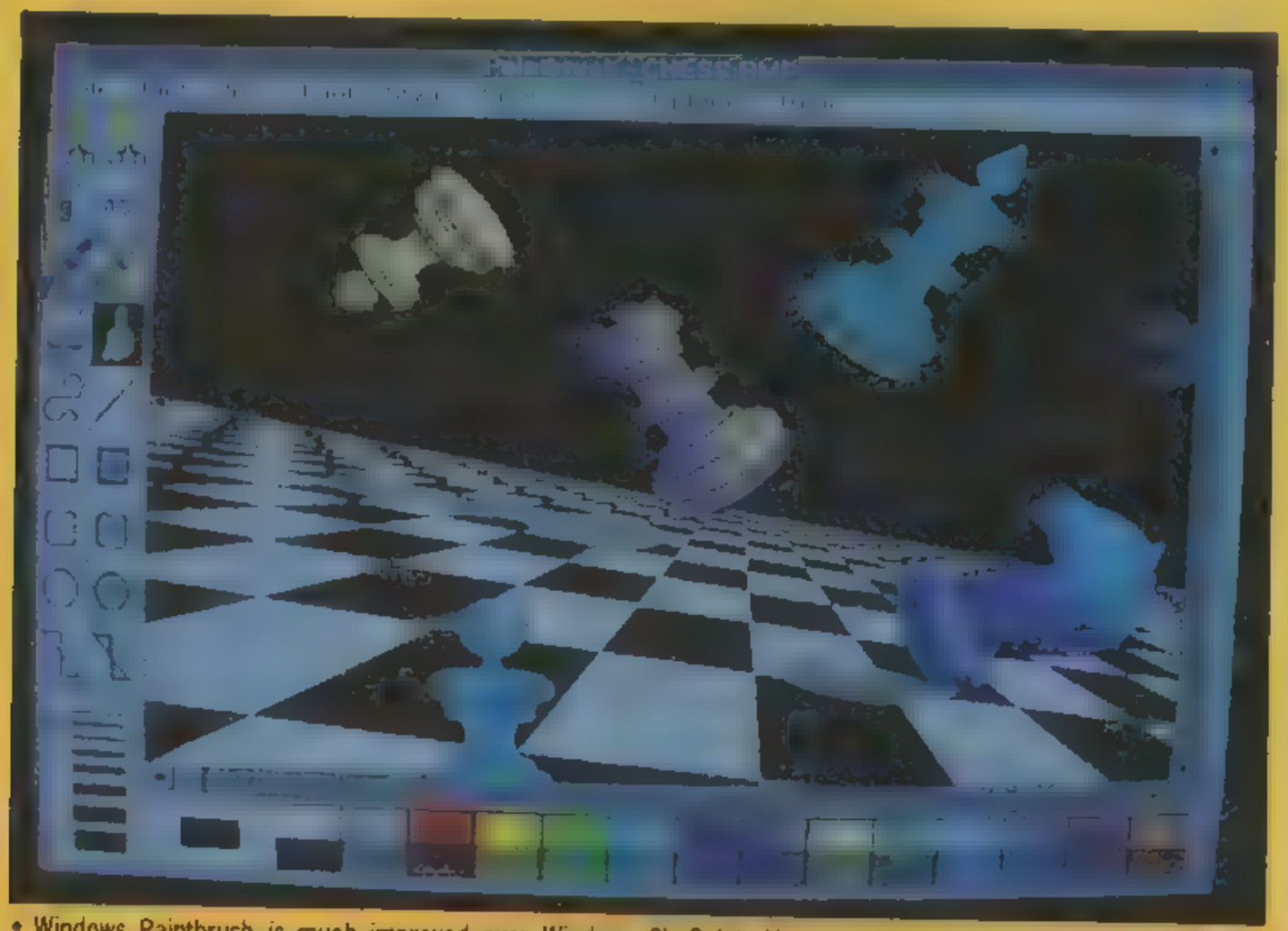
The real applications won't be long in coming, though. Many of the Windows 2 products will need slight modification to run under Windows 3, particularly in their handling of memory. Most are being converted at the moment, but there will also be many new versions of existing Windows products which take advantage of the new facilities of Windows 3.

Companies known to be close to finishing applications for Windows 3 include Lotus, Xerox – with *Ventura* – and IBM. Many more are working on new software. All in all, things look pretty rosy for Microsoft. It has, in Windows 3, a product which is bright and fun to use. It's enough like Presentation Manager that the company can talk about 'a stepping stone to OS/2' and placate IBM.

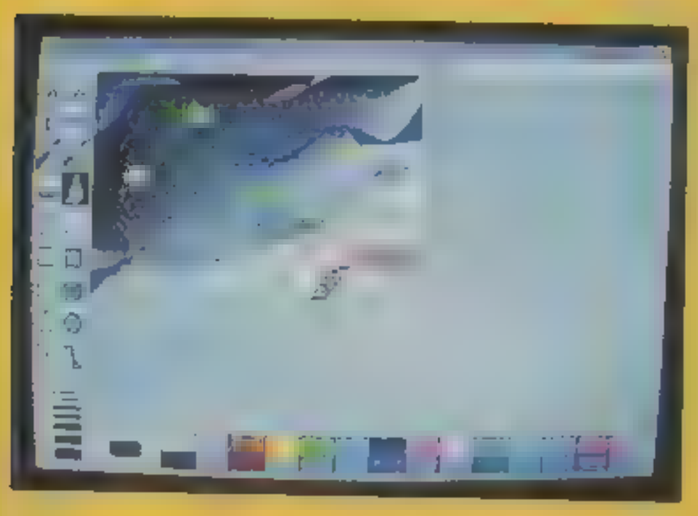
For those who can't or won't risk falling in the river, though, there's a lot to be said for sitting on this particular stone and cooling your feet in the water. ■

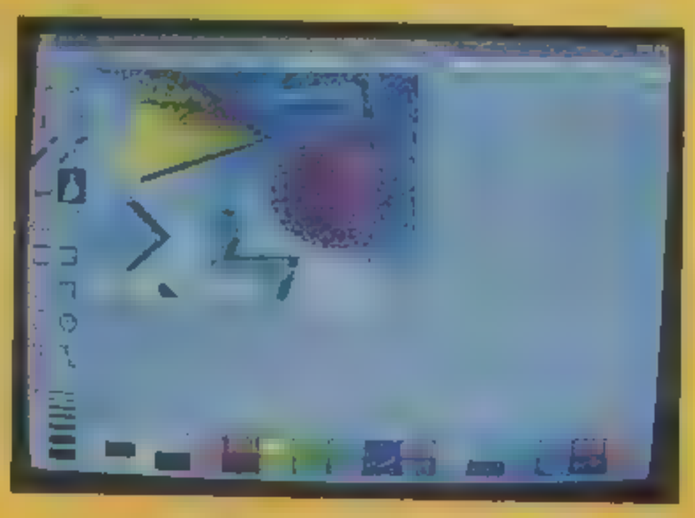
Windows 3 costs £113.85 (upgrade from Windows 2 £51.75), and will run on any PC with a graphics adapter and a hard disk, but 286 or 386 systems with 1Mb are recommended. Contact Microsoft on 0734 50074.

GRAPHICS

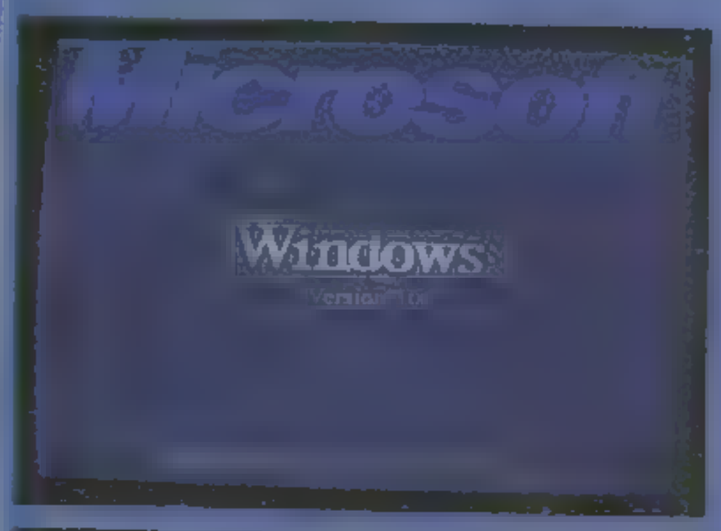


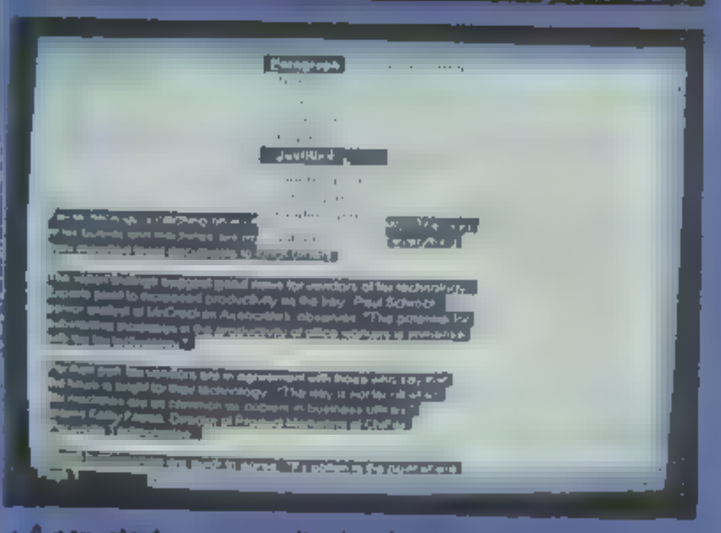
• Windows Paintbrush *is much improved over Windows 2's* Paint. *You can use it to design backdrops for the Windows 3 desktop.*



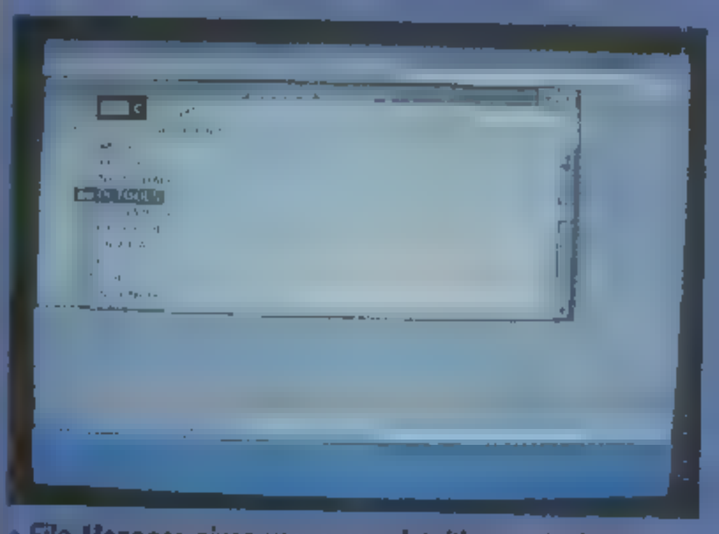


WRITE ON





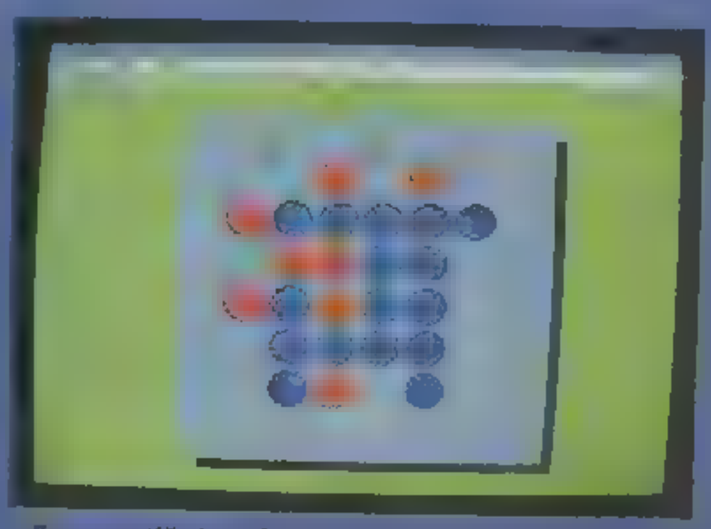
• *A new start-up screen (top) welcomes you to Windows 3, where Write (above) is a competent word processor.*



• *File Manager gives you a very intuitive control over the hard disk, better than any Xtree-type utility.*

PLAYTIME

• *While you're waiting for Windows 3 applications to come out, Solitaire provides some colourful light relief.*



• *Fear not, Windows 2 users' favourite game of reversi is still there.*

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Every few weeks it seems a new console is being launched – just look at the news pages of this issue of Express for proof. Richard Monteiro looks at why the computer industry is going console crazy.

KEYBOARDS OUT, CONSOLES IN

Several factors have been responsible for the sudden surge in console interest. First, console games – being hardware based – are extremely difficult to copy; a pirate's nightmare, a software house's dream. Second, the latest 16-bit consoles make the current crop of home computers look pathetically inadequate and underpowered. Third, the prospect of tens of thousands of software sales in countries like America and Japan has left many software houses with dollar signs in their eyes. Finally, with home computer costs spiralling, a console looks like a bargain buy.

You've heard it a hundred times over: piracy is killing the software industry. As long as software is stored on tape or disk, both of which have an easily-breached architecture, there will always be piracy at two levels: casual copying, "Oh, have you seen this latest *MegaDeath Invaders IV* game from Hypersoft Here, borrow it" – and professional pirating. While it's impossible to deter the professional profiteering pirate, casual crackers soon give up if the task is near impossible or prohibitively expensive.

Less piracy, more sales. That's why software houses are so keen to support the new medium.

IN THE BEGINNING

Consider current computer technology. Both the STE and Amiga have 4,096-colour palettes. Not too bad, but the STE can only display 16 colours on screen simultaneously while the Amiga a more useful 64 (yes there's HAM, but you can't write a shoot-'em-up in HAM). In terms of custom graphics power, the STE only has a simple blitter (and that's not up to much) and hardware scrolling. The Amiga, however, is better off with its nifty barrel-shift blitter, hardware scrolling and eight hardware sprites.

Soundwise both 16-bit computers offer PCM (pulse code modulated) output. In short, they offer you the ability to salsa with sampled sounds.

Many consoles, especially recent additions, pack an almighty punch on the gameplaying front. Some consoles go far beyond the capabilities of any existing home computer, and even give dedicated coin-ops a run for their money. Even though a 68000 is probably the most powerful processor you're likely to find in a console, it's the numerous slivers of custom silicon that provide all the fire power.

Take NEC's PC Engine: an 8-bit Z80-like processor does the work while sophisticated graphics and sound hardware provide a palette of 512 colours, 32 colours on screen and six-channel stereo sound. The machine huris data to screen faster than an Amiga or ST – astounding when you consider its heart is a lowly 8-bit processor.

More recent machines like the Megadrive, Atari Lynx and Neo-Geo make even Atari and Commodore's next generation 32-bit machines look meek. The Atari Lynx – which is driven by a 6502 – has amazing custom silicon that gives it unmatched hardware zoom, scrolling, and sprite handling. And the sound has to be heard to be believed. What's most incredible though, is that the device sits in your hands.

While the Neo-Geo offers arcade-quality entertainment – 13-channel sound, 4,096 on-screen colours, 12MHz-rated 68000 processor and enough custom circuitry to fill Silicon Valley – there's no way you'll build up a vast software collection when titles cost around £200 a shot.

That leaves the Megadrive And what a machine! For around £200 you get a 16-bit power house which walks all over the ST and Amiga. A 68000 and a Z80B are used to keep things ticking, while custom chips enable the console to display 64 colours at once, have 80 hardware sprites and 12-voice FM sound synthesis.

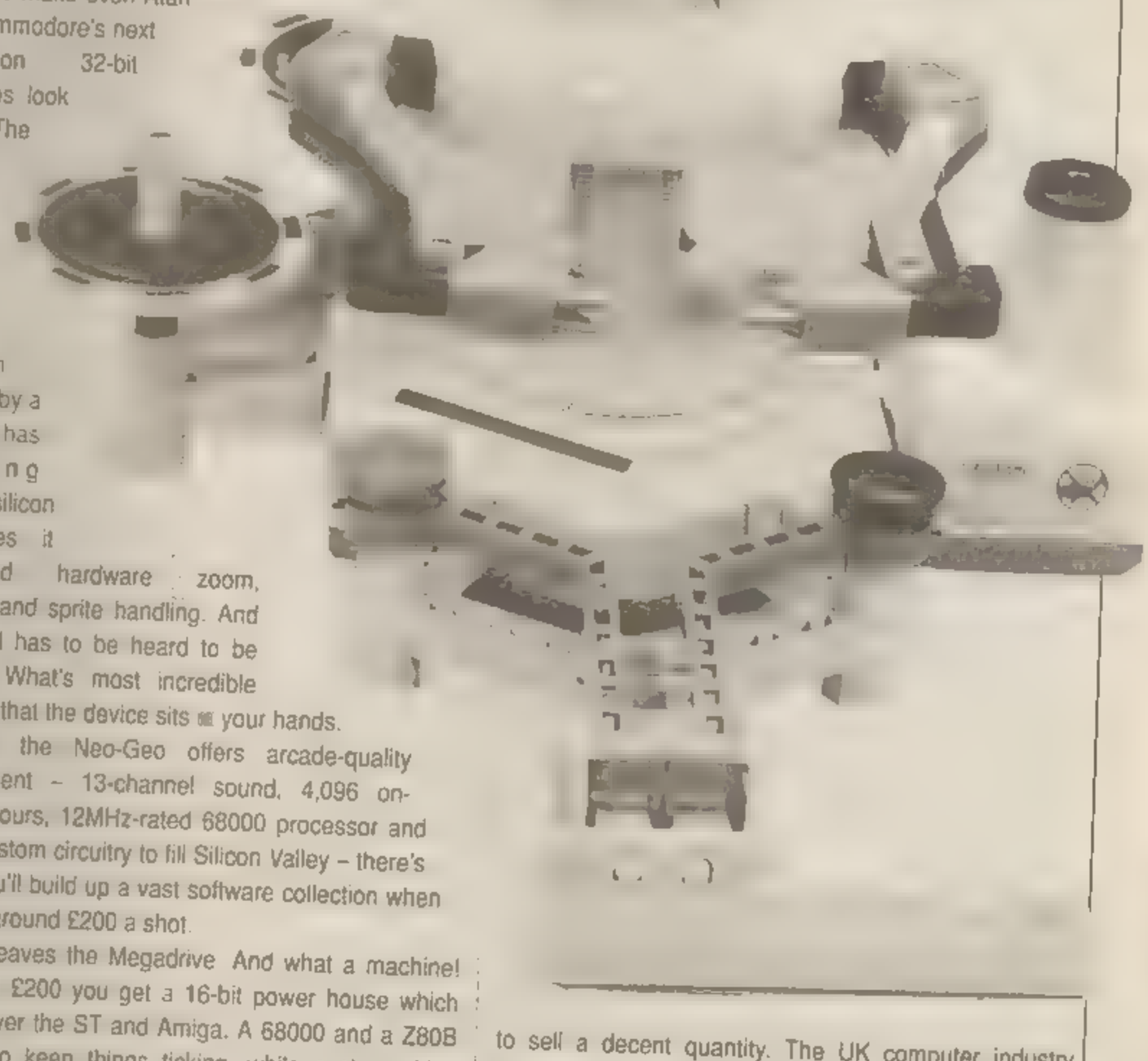
But let's not get too carried away with tech specs.

From a programming perspective, consoles are comparatively easy to program – the hardware does most of the tricky stuff. Naturally programmers are very keen to get on the console development bandwagon.

Sega and Nintendo soon discovered the enormous cash mountains that could be generated by publishing console software. To the dismay of other companies, the Japanese giants have been very cautious about who they let develop for their machines. Not only that, but Nintendo goes a stage further and regulates the number of releases every month. By doing this the market isn't flooded and every game released is guaranteed to sell a decent quantity. The UK computer industry could learn by adopting similar philosophies.

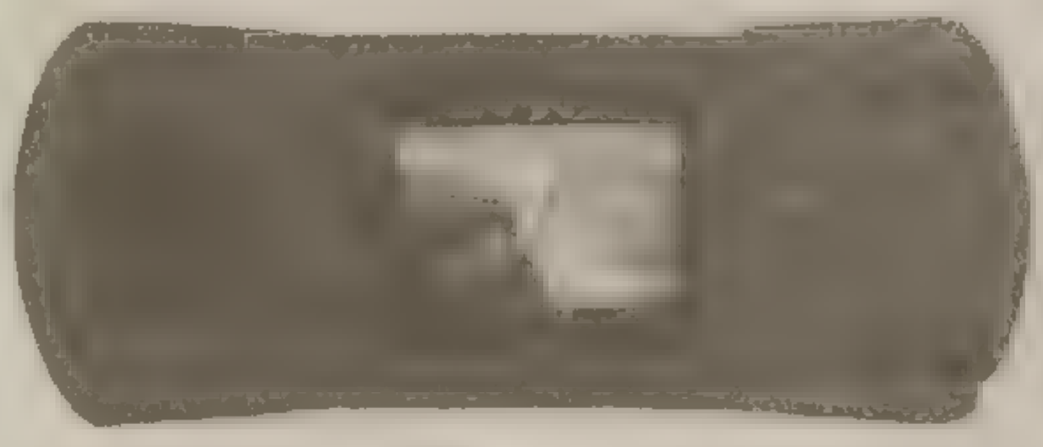
Although Nintendo's practices are definitely one for the Monopolies Commission, you've got to admit they work exceedingly well. When you consider over ten million copies of Nintendo *Super Mario Brothers* have been sold world-wide, it's not hard to understand why software houses are so keen get in on the console act.

Back in the days when the C64 and Spectrum were big news, there was always the threat of a new generation of super computer. Then it was the ST and Amiga. Now there's nothing. Sure Atari have got the TT, Commodore the A3000 and Fujitsu the FM Towns. But at what price? No one's going to pay £2,000-plus for an entertainment machine. As far as games players are concerned, there is only one cost-effective option: the console. And what a choice there is... ➤



• *Consoles look less and less like 'real' computers, as this Nintendo add-on shows!*

ATARI LYNX



The first, and, until this week's TurboExpress launch, only, colour hand-held console. Many of the lads responsible for the design of the Amiga were involved in the Lynx's creation – indeed, much of the hardware is purported to be similar to the Amiga's, to the extent that Atari gives Lynx programmers Amiga 2000s for development.

Up to 8Mb of data can be stored on the compact console cartridges, and several Lynx-owning game players can be linked together to battle it out head-to-head.

The Lynx is sadly marred by lack of software; plenty is promised though.

MEMORY: 64K
PROCESSOR: 6502
COLOURS: 4,096, 16 on screen
RESOLUTION: 160 by 102
SOUND: mono four-channel, five-octave
SOFTWARE BASE: poor
ESSENTIAL SOFTWARE: *California Games, Gates of Zendocon, Blue Thunder*

California Games
Although bundled with the system, the game is well worth a mention. This one is all about sun, sea, sand and surf.

Gates of Zendocon
Nothing but non-stop blasting shoot-'em-up action. You must guide a star cruiser through wave after wave of enemy aliens.

Blue Thunder
Roll over, *Afterburner*. You fly around in a jet blasting everything that appears.

EXPRESS RATING: ★★★★★
PRICE: £179.99
AVAILABILITY: Atari 0753 33344

ATARI VCS

Ouch! This is painful. Why a machine offering such dated technology should still be selling is baffling. Although, if Atari's last financial figures are to be believed, it's obviously not selling that well.

Two versions are available: the VCS2600 and VCS7800. The 7800 is actually a simple improvement on the 2600 which offers marginally better sound and graphics.

Astonishingly US Gold is developing for the VCS market – not the UK market as it barely exists, but the US market. Again, if Atari is to believed, the VCS is the single most popular game console in the United States.

However see Nintendo (below) for an alternative view of American market penetration and – presumably – popularity

MEMORY: a little
PROCESSOR: 2600: 6507, 7800: 6502
COLOURS: 2600: 16, 4 on screen, 7800: 256, 16 on screen
RESOLUTION: 2600: 192 by 160, 7800: 320 by 242
SOUND: 2600: mono one-voice, 7800: two-voice

SOFTWARE BASE: good abroad but rather poor in the UK
ESSENTIAL SOFTWARE: *Ms Pacman, Galaxian, Impossible Mission*

Galaxian, Impossible Mission

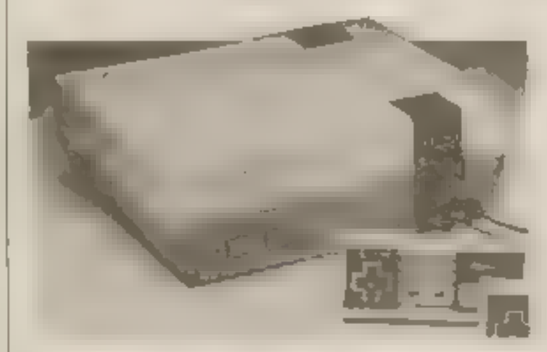
Ms Pacman
Like the original *Pacman*, only this time you get to control a female Pacman. (How can you tell? She wears a pink bow – or is this transvestism?) Addictive and responsive.

Galaxian
Classic coin-op shoot-'em-up action. Invaders swoop down – the idea is simply to blast the lot. Fun!

Impossible Mission
Fantastic conversion of the C64 original. Only available on the 7800. Well worth staying a while for this one.

EXPRESS RATING: ★★★★
PRICE: 2600 £50, 7800 £75
AVAILABILITY: Atari 0753 33344

NINTENDO CONTROL DECK



A very old machine which, apart from the Atari VCS, is the most basic console still around.

This doesn't stop most Americans eating, breathing and sleeping Nintendo, however. In fact it has been estimated that almost one in four households in the United States owns at least one Nintendo machine.

In the UK market penetration is considerably less. Industry pundits estimate that only 40,000 machines exist over here.

Although looking tired, rough and ragged round the edges, the Nintendo benefits from a wealth of superbly playable titles. Indeed, of all machines, the Nintendo probably has access to the most playable games.

Limited availability at present, but should increase due to new distribution deal through Serif.

MEMORY: 16K
PROCESSOR: custom 8-bit
COLOURS: 52, 16 on screen
RESOLUTION: 256 by 240
SOUND: mono three-voice

SOFTWARE BASE: around 50 titles, many more abroad
ESSENTIAL SOFTWARE: *Life Force, Super Mario Bros, Mega Man*

Life Force
Better known as *Salamander* in the arcades, the game is a frantic one- or two-player shoot-'em-up. Stunning graphics and classic arcade action make this a sure-fire hit.

Super Mario Bros
The game best known to Nintendo players everywhere, and the biggest-selling computer game in the world. There are several games in the *Mario* series. All are fantastically addictive.

Mega Man
A monumental game in which you must defeat an array of evil characters with silly names like Iceman, Elecman, Gutsman, Fireman and so on.

EXPRESS RATING: ★★★
PRICE: £100 (standard), £150 (deluxe)
AVAILABILITY: 071-836 2975

NINTENDO GAMEBOY

Contrary to what Atari might try to tell you, Nintendo was actually the first company to introduce a hand-held games console.

Although the Gameboy already looks dated with its monochrome dot-matrix screen, its enormous range of quality games, very compact size and cheap price means it is still in huge demand by travelling games players. Sound is normally mono, but headphones can give you that three voice stereo sound.

Like the Lynx, a lead is available which enables two machines to be connected together for simultaneous two-player action.

MEMORY: 8K
PROCESSOR: custom 8-bit
COLOURS: black and white
RESOLUTION: 160 by 144
SOUND: stereo three-voice
SOFTWARE BASE: around 20 titles, loads on the way
ESSENTIAL SOFTWARE: *Nemesis, Space Invaders, Tetris*

Nemesis
Horizontally scrolling shoot-'em-up based on the arcade classic of the same name. Superb sounds and smooth parallax scrolling really show off the unit's capabilities.

Space Invaders
The first shoot-'em-up your Dad ever played and now you can have your chance too! And not only are they back, this time they're smaller and even more mono than before.

Tetris
Fantastically simple concept that's taken the world by storm. Slotting in the various shapes can become horribly addictive. Arguably at its best on the Gameboy, especially in the head-to-head two-player mode, which is nothing short of brilliant. Get this if nothing else.

EXPRESS RATING: ★★★★★
PRICE: around £100
AVAILABILITY: various grey importers at present

NEC PC ENGINE

COLOURS: PC Engine: 512, Turbo Grafx: 4,096, 32 on screen
RESOLUTION: 256 by 216
SOUND: stereo six-voice

SOFTWARE BASE: loads of titles, constant flow from Japan
ESSENTIAL SOFTWARE: *Gunhed, Pacland, Volfied*

Sadly NEC has no intention of bringing this fine machine into the UK. Only available through grey importers and some independent retailers like Virgin Megastore and Hamleys. A CD-ROM unit can be added, and numerous CD-ROM titles exist. NEC has confused the Engine marketplace by introducing various different versions of the machine, including the Core Grafx, Power Grafx, Power Console and the enhanced Super Grafx. Steer clear of all models bar the PC Engine and Super Grafx. The latter of these is NEC's enhanced machine offering superior graphics power.

MEMORY: PC Engine: 72K, Super Grafx: 160K
PROCESSOR: Z80

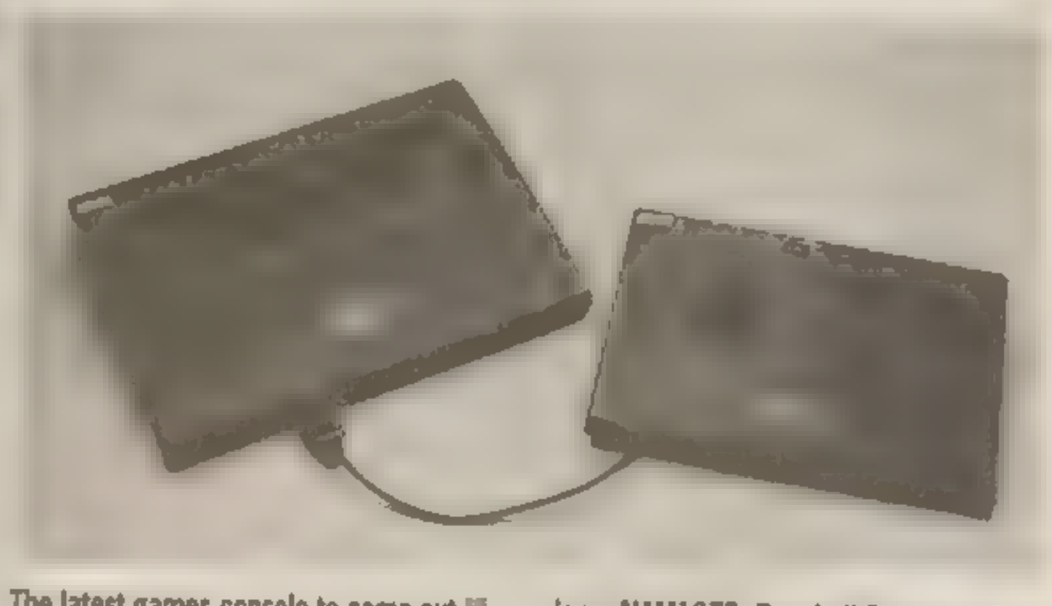
Gunhed
The fastest vertically-scrolling shoot-'em-up outside the arcades. And the only game Andy Storer won't lend anyone else. Speaks for itself.

Pacland
Cutesy and colourful clone of the classic coin-op game. Guide a Pacman through numerous levels, dodging monsters and collecting bonuses.

Volfied
A departure from normal arcade action games. The idea is to gradually fill in areas of a square until there's no room for the aliens to run. Addictive and novel.

EXPRESS RATING
PRICE: PCEngine £200, Turbo Grafx £300
AVAILABILITY: various grey importers

NEO-GEO



The latest games console to come out the East is astounding mainly because of the price: £450 will buy you the console and games, which cost around £120 even in Japan, are a staggering £200 a throw.

Whether any game can be worth that is open to debate, but the Neo-Geo certainly offers graphics and sound which are indistinguishable from the real arcade games. Excellent, but strictly for the rich.

MEMORY: 132K
PROCESSOR: 68000 and Z80
COLOURS: 65,535, 4,096 on screen
RESOLUTION: 640 by 200
SOUND: stereo 15-voice array of chips

SOFTWARE BASE: five at present:*Mah Jong, NAM1975, Baseball Stars* and *Top Players Golf*
ESSENTIAL SOFTWARE: the price prohibits more than one game, so make it *Magician Lord*

Magician Lord
Just like the coin-op, with the chance power up as Shinobi, Dragon Warrior, Waterman, Poseidon, Samurai and Raijin. Indeed you can save your place on a card, insert it into the arcade game and continue where you left off!
Shame about the price though...

EXPRESS RATING ★★
PRICE: around £450
AVAILABILITY: grey importers

SEGA MEGADRIVE

Sega's long awaited machine seems bound be the market leader when it eventually arrives official form. Featuring the same processor as the ST and Amiga, its dedicated hardware nevertheless sets it apart terms of game playability, and support from the major software firms means that there will be plenty of arcade and computer game conversions. The one have.

MEMORY: 138K
PROCESSOR: 68000 and Z80
COLOURS: 512, on screen
RESOLUTION: 32 by 224
SOUND: stereo 12-voice custom FM chip
SOFTWARE BASE: about 20 titles, more trickling in

ESSENTIAL SOFTWARE: *Golden Axe, Super Shinobi*

Golden Axe
Wander ancient lands killing all in your path with a giant axe. Very close to the arcade version.

Super Shinobi
Excellent Japanese style beat-'em-up.

EXPRESS RATING ★★★★
PRICE: around £200
AVAILABILITY: grey importers at present, but Virgin (071-727 8070) will be handling

SEGA MASTER SYSTEM

Virgin has excelled in promoting Sega's 8-bit machine in Great Britain. It's estimated some 200,000 machines are in use – impressive by any standards. The technology is dated and – with its powerful 16-bit brother about to be unleashed – looks likely to suffer in the next year. Still, there's lots of software available and many UK software houses including Titus/Entertainment International, Elite and US Gold have started developing for the machine.

MEMORY: 24K
PROCESSOR: Z80
COLOURS: 64, 16 on screen
RESOLUTION: 256 by 192
SOUND: mono three-voice, four-octave

SOFTWARE BASE: loads of titles, two to three new ones every month

ESSENTIAL SOFTWARE: *Wonderboy III, R-Type, Vigilante*

Wonderboy III
Not a direct clone of the arcade version, but uses adventure elements from its predecessors. Great depth and playability.

R-Type
A scrolling shoot-'em-up with dazzling graphics, frantic gameplay and huge animated sprites. An excellent coin-op conversion.

EXPRESS RATING ★★★★
PRICE: £80, £100 includes light gun, £130 includes gun and glasses
AVAILABILITY: Virgin (071-727 8070)

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LOCOSCRIPT GROWS UP

LocoScript is the idiosyncratic word processor which made the Amstrad PCW a success. Keith Pomfret got to grips with the PC version...

The Amstrad PCW, the computer that Amstrad hoped would replace the typewriter, comes with *LocoScript* as a word processor. The basic PCW8256 is a simple machine, based around an ageing processor with a green screen monitor, 256K of RAM and a single 3-inch disk drive, but thousands of typists, journalists and office workers took to it, thanks mainly to *LocoScript*.

Although quirky, unfeatured and pedantic at times, PCW *LocoScript* represented a reasonably easy path into the world of computing. Locomotive Software, the program's publisher, improved it to *LocoScript 2*, but users soon found *LocoScript* was outgrowing the PCW. Many customers wanted to remain faithful to *LocoScript* but needed the power and industry-standard software of an IBM PC. Similarly Locomotive Software wanted to take advantage of the MS-DOS operating system of the PC while retaining the familiar feel of *LocoScript* and so, eventually, *LocoScript PC* was born.

IN THE BOX

Opening *LocoScript PC*'s large green box reveals a well thought out package of instructions, manuals and tutorials. Locomotive has left nothing to chance and the box seems to contain a book for everything. To get you started, a fold-out sheet gives general information about *LocoScript PC* and advice on the installation – a simple procedure as both 5.25-inch and 3.5-inch disks are included. When installing the package you can choose the language you want to use – including Greek and Cyrillic – a distinguishing feature of PCW *LocoScript*, and one which made it popular with linguists.

Because there are so many printers on the PC market, there is a book which is solely dedicated to description, categorisation and installation of everything from a clattery 9-pin dot-matrix to a silky-smooth laser. If Locomotive Software ever decides to market the printer manual on its own it will probably sell very well, as there isn't a book with as much simple-to-digest information on printers available anywhere else.

A tutorial helps you test the water, and a well put together manual deals with the features in detail. Another manual covers all of the data manipulation and retrieval information features of *LocoScript PC*'s built-in database.

ON THE FOOTPLATE

After the installation, the manual was consigned to the drawer, the true test of intuitive software is – can it be efficiently used from the on-screen information? *LocoScript* passed this test with flying colours. The manuals were then retrieved for an in-depth look.

The computer's function keys bring down menus which allow you to deal with features such as editing, printing, spelling checks, type size, spacing and layout, and no feature is more than a couple of keys away.

One of the features most useful in an office is mail merge. This enables a similar letter to be sent to different customers, with their details retrieved from a database and appended to the letter. Some cheaper word processing packages have mail merge hastily bolted on as an afterthought, but not so *LocoScript PC*. The mail merge has been designed into the package and feels like part of it, not an add-on.

The *LocoScript PC* database links into the word processor and its simple structure and ease of use make it ideal for someone who wants a database available for incorporating addresses and suchlike into their documents.

All the database functions are available from the word processor. *LocoScript PC* has the simple appearance and appeal of a card index, while retaining the strength of a powerful computerised database. It is easy to use and its power makes it much more than just an accessory.

SOMETHING FOR ALL

Users moving on from *LocoScript* on the PCW will feel quite at home with the PC version, and the extra features and good use of the PC's operating system will make them loath to return to the earlier versions.

But Locomotive hasn't forgotten the new user. The documentation assumes no prior knowledge, and indeed when a typist who wasn't computer literate was placed in front of a PC with nothing but the manuals and a pat on the back, a frown quickly became a quizzical look, and then a smile. In a matter of minutes or so undying allegiance was being pledged to the great white computer.

There are tutorial files that can be loaded into *LocoScript PC*. These integrate with the tutorial manual to provide 290 pages of practice and reasonable index. A fine postscript at the end of the tutorial looks at a range of documents that you may wish to prepare – letters, memoranda, invoices, adverts, menus, newsletters, reports, even books – and gives layout hints.

ALL LINK TOGETHER

For those with valuable data files stranded on a PCW, all is not lost. Locolink, an optional add-on, is a cable which connects the expansion port of the PCW with the Centronics port of a PC, allowing data transfer between the machines. Routines built into *LocoScript PC* convert the PCW files into PC format.

LocoScript PC is a well thought out, easy to use word processor for everyone. It will be equally at home in an office or domestic environment, with a journalist or housewife. Locomotive's research has paid off and *Locoscript PC* is all that it promised. It will delight current users of *LocoScript 1* and *2* with its similarity to the earlier versions, while adding to the features. PC owners and those planning the purchase of a PC will find a simple-to-learn well-featured package that won't break the bank.

LocoScript PC costs £144, or £115 if you are upgrading from a PCW. The optional Locolink costs £14.95. More information from Locomotive Software on 0306 740606.

• LocoScript PC features a semi-WYSIWYG display and drop-down menus.

TECH TIPS

Does your PC keep packing up? Is your Amiga less than friendly? Would your ST try the patience of a saint? Write to Tech Tips and we'll soon see you right. Send your sorry stories to Tech Tips, Beauford Place, 30 Monmouth Street, Bath BA1 2AP. Sorry, but we can only reply in print.

HELP! Sister of mercy

My brother and I got an Amiga 500 for Christmas, and although we have been happy using the modulator to play games through the TV, we need a monitor now to do serious work like school projects for the National Curriculum. Our sister has a CPC 464 that she doesn't use but the connections look different. Can we make the Amiga work with it? She says that it won't and that her Amstrad DMP printer is no good either. Someone at school said that she is wrong and that they will work together.

If we do a word processing job with my sister's DMP will it still work with another printer like a laser?

Darren and Wayne Barlow, Lostwithiel, Cornwall.

You don't say which monitor is with your sister's CPC – if it's the green one it will work but it's a terrible waste of the Amiga's 4,096 colours. The colour monitor will also work but make sure whoever makes the lead up knows which it is, as the wiring is different. It's a simple matter getting a lead made up. Your local computer shop should be able to help there but if they can't, keep an eye on the ads Several firms are now supplying ready-made leads to connect Amigas and STs to a variety of monitors. Some of the colours may look a little different on the Amstrad CPC monitor but you'll get a much better picture than through the TV.

If your sister has the original Amstrad DMP 1, it probably won't work with the Amiga unless you can find a printer driver for it. A printer driver is a small program that converts the output of a word processor, spreadsheet or DTP program and turns it into a series of codes that a particular printer can understand. The Amstrad DMP 1 was a nasty old beast with fewer features than a Reliant Kitten and so isn't any great loss. The word processed output of the DMP 1 looked pretty tacky anyway.

All the other Amstrad DMPs, from the charcoal grey 2000 to the expensive wide carriaged models, are Epson-compatible – which means that they are supported by most applications that provide printed output. A quick check of five Amiga word processors showed that they could all drive Epson compatible printers. The two Amiga desktop publishing packages that were lying around the office could also output to an Epson-compatible printer

A text file saved from a word processor will print out on any printer that you have installed a printer driver to match. For example, if you typed a letter with a DMP 2000 attached and its printer driver installed, you could immediately print that letter on the DMP 2000. If you then saved the letter to a disk, and installed a printer driver for a laser printer, you could re-load the letter into the word processor and print it out on the laser. Some word processors allow you to have more than one printer driver available at the same time. This way, you don't have to stop and reconfigure if you have the wrong printer driver installed. You can change the printer driver 'on the fly.'

HELP! Do doo ROM ROM

You recently said that owners of the SAM Coupé would be given a new ROM to exchange for the existing one and that the job of changing it would be done by the owner. We bought a Coupé for my eight-year-old son and the very thought of him taking this expensive computer apart makes my husband and I cringe. Neither of us are technically minded (he is an accountant and I am a florist) so we don't feel confident to undertake the job. We also wonder about the legal implications of opening the machine up and meddling with the insides. Will this cause warranty problems? It is a few weeks since you wrote about the Coupé ROMs and we haven't received them yet. When are they sending them out?

Ella Barry, Folkstone, Kent.

To deal with your queries in reverse order, Alan Miles, boss of MGT which makes the Coupé, assures us that the ROMs are going out to anyone who returned their registration card. He also said that following the simple instructions will result in a safely-changed ROM in a matter of 15 minutes or so by even the most un-technically minded. A further statement from MGT assures us that doing the ROM change will not affect the warranty as long as the supplied instructions are followed.

If you have returned your registration card and haven't received the ROM, check with MGT that they have received the card.

We did the ROM change here in the office in a matter of about eight minutes and although there are a couple of fiddly membranes to push into slots, found the job relatively simple. The instructions that came with the ROM were clear and concise. It is certainly within the capabilities of a literate adult with reasonable co-ordination.

When your ROM arrives, read the instructions and decide whether you can confidently follow them. If you don't feel able or confident to do the change, one of MGT's dealers will do the swap for you free of charge.

HELP! Swapping files isn't as easy as it looks

I am puzzled. I use a real IBM PC-AT at work and it has an internal high-density 5.25-inch disk drive. We have added a high density 3.5-inch drive to it and written software to enable us to import data and graphics files from other machines and save them onto a 5.25-inch PC disk. So far so good. All the files we receive from our agents that are on Commodore, Atari, Apricot and other such disks are read into the AT and copied across on to the 5.25-inch PC disk. Then, using various utilities written for the purpose, we can incorporate them in reports and documents.

One of our agents, however, uses a Macintosh computer, and whenever we receive his disks, our AT returns errors and won't read them. He has sent them formatted as either 400K or 800K so surely our 1.44 Mb 3.5-inch floppy should read them. Is there a piece of software that will do the job?

Joe E. Forbes, Newcastle, Staffs.

The Macintosh drives are physically different from the floppies in other machines Depending on where the read head is in relation to the disk, the speed that the disk rotates differs. IBM PC drives aren't made with the capability to vary the speed in this way and I know of no software solution to the problem.

All may not be lost though. Some of the more recent Mac models will read and write MS-DOS PC disks. If your agent has one of these or at least access to one, he will be able to use a utility called *Apple File Exchange* to write a disk that you can read on the PC-AT

If this isn't possible, the alternatives are to use a bureau that does file transfer: connect his Mac to a PC using a null modem cable and use communications software to transfer the files or finally to find a bulletin board which will allow him to upload the file via a modem. You can then log on and retrieve it.

There is also a PC add-in board which will let your drive directly read the disks, but this is inordinately expensive, and it would be cheaper to buy a PC-compatible drive for your agent's Mac.

HELP! Chips shop

During the commissioning of a chemical plant where I work there were large rack-mounted computers attached to the various testing equipment to help install and calibrate the control equipment. Once commissioned, a lot of this calibration equipment was redundant and the firm were going to junk it.

Knowing that I like to dabble with computers, one of the foremen told me that I could delve into the boxes of junk and take anything that was of use to me.

All the reusable stuff like disk drives had been kept for re-use but I found

enough memory chips to upgrade a few STs and Amigas. In among the memory chips were some slightly bigger chips that have a round window in the middle and various numbers on them. The numbers are 2764, 27128, 27256, and 27C128. What are they and are they any use – I have over 150?

Mohammed Azam, Richmond on Thames.

You are a lucky chap. The chips that you have found are EPROMs. An EPROM is an Erasable and Programable Read Only Memory. By using an EPROM programmer, you can write your own programs onto an EPROM and they will stay there as if they were on a ROM, unless it is subjected to high-intensity ultra-violet light.

The numbers on them refer to their type and capacity. The 27 is the type and the capacity is in kilobits. Divide by eight to get kilobytes. Hence the 64 is 8K, the 128 is 16K and the 256 is 32K. The 'C' in the 27C128 means that that EPROM is of the CMOS type and uses less power. CMOS chips are more prone to damage by static electricity so you shouldn't handle a CMOS chip by the legs as this can 'kill' it. (You shouldn't handle any chip in this way but CMOS chips are especially sensitive.)

You haven't said which computer you use but the BBC, ST, CPC and PC all have peripherals available which allow them to almost instantaneously load software from EPROMs. Check the magazines which deal with your machine ■ find out what EPROM erasers, programmers and software are available. The CPC, for example, supports at least three programmers, two erasers and an elegant little program to turn your BASIC or machine code into an instant ROM loader.

Alternatively, you could always sell them. EPROMs cost anything from £6 upwards so even at half of that, you would have enough cash for a brand new computer!

■HELP! CP/M queries

I bought a PC cheaply at an insolvency sale and got a box ■ software with it. The PC works fine and the software that came with it (a word processor, spreadsheet, database and a communicatIons program) all work well.

In with the MS-DOS disks was a disk that said 'CP/M boot disk' on it. I put it in the drive and 'booted' the PC with it. Instead of the nasty MS-DOS I got my old friend CP/M. I have an Amstrad PCW and once I'd learned to find my way around *LocoScript*, I went on to study CP/M.

Ha, thought I, I will be a really clever sod. I borrowed a serial port for the PCW and connected the two machines together by a simple cable. Using communications software I got some ■ my favourite programs across to the PC. I ran CP/M on the PC and tried to persuade the programs to work. They don't! Have I forgotten ■ do something? Or is there a gremlin in my serial port?

The local computer shop weren't interested. When I asked them they told me that CP/M had been abolished and that I should give up. I contacted the computer's manufacturers but their sales people said it was obsolete and had never heard ■ CP/M. Help, please. [Wife's postscript: Please sort this out. He spends most of his waking hours shaking his head and muttering about operating systems and pips and so on. Can I have my husband back?]

Geoff Booth and his wife (the long suffering Fiona), Bearwood, Birmingham.

The version of CP/M that runs on the PC is CP/M-86 and was written to run on ■ machine with the 16-bit 8086 processor. The version that runs on the PCW is CP/M Plus (also known as CP/M Version 3). In simple terms they aren't compatible. When the PC became popular, CP/M-86 found some favour with people who were familiar with the earlier CP/M operating system. It offered them a system very similar ■ their old one so they could find their way around easily. But CP/M-86 never became as popular as MS-DOS which was bundled with PCs.

CP/M came from Digital Research and MS-DOS from Microsoft. More recently Digital Research has chosen to follow the Microsoft line and the current version of its operating system for PCs is DR-DOS and follows the path carved by MS-DOS, so it looks as though CP/M will remain the domain of the enthusiast and fade from the business world.

■HELP! US aid

When we returned from four years in the US we brought our Amiga and TV with us. Notwithstanding the difference in voltage and cycles, we have been able to persuade the Amiga and TV ■ work together by using a purpose-built transformer to reduce the line voltage and alter the frequency. The Amiga plugs into the direct socket on the TV. When we try to tune the TV into a regular TV channel though, there is no broadcast station there. We've tried ■ the 12 tuner buttons but can't get anything. I know that the tube and speakers are OK because the Amiga works with it. Has connecting the computer into the TV in the UK damaged the TV? We get your mag every week – there's nothing like it in the US.

Clive German, Cow Plain, Hants

The Amiga hasn't damaged the TV at all. The TV you bought in the US works on the American NTSC television broadcast system and is totally incompatible with the UK's PAL system. You haven't lost everything though, at least you still have a perfectly good monitor for your computer even if it won't work as a TV.

■HELP! Talk to me

Why won't my Archimedes recognise my modem? I use the same modem (a Linnet) with my Atari ST and as far as I know there's nothing wrong with it. I bought an Archimedes/modem lead and a friend wrote a simple terminal emulation communication program which works fine with his Archimedes. He is able to connect with bulletin boards and is working on an additional module to download software.

I'm not one to tamper with my computers and the Archimedes has never been interfered with since new, so I am at a loss why it won't work.

Alan Beddoes, Bangor, N.I.

If your computer has never been interfered with, there's a fair chance that it hasn't got a serial port. The Archimedes, and BBC A3000, do not have a serial port fitted as standard. The connections are there but there's a small modification that needs to be done before it will talk to the outside world.

Check with your friend and see if his has been modified thus. Any authorised Acorn dealer should be able to add the necessary bits. ■

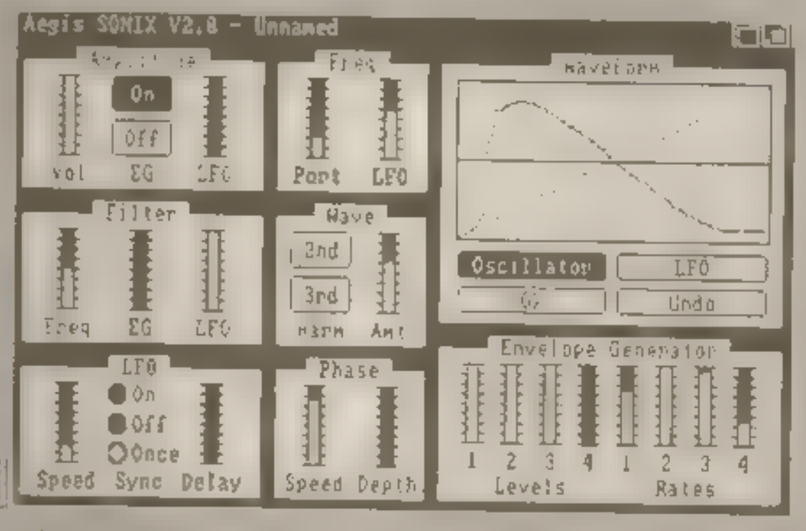
■HELP! Delving into the depths of Amiga music

A few months back I wrote to you to ask which computer was best for music, but in the ensuing time I bought a Commodore Amiga (an ST was eventually recommended because of its MIDI).

I am satisfied with the internal sound chip and have made some astounding (well, astounding to me anyway) music using *Deluxe Music*. My son brought a 17-Bit disk home with a 'jukebox' of songs on it and this has set me thinking. All of the songs on this 'jukebox' sound more realistic than anything I have done and played through the hi-fi, they match anything on the radio. I assume that these sounds have been done using MIDI but I don't know how to use it. MIDI is on one of the menus of *Deluxe Music* but I can't find it anywhere on the computer.

Desmond Stocks, Cromer, Norfolk.

I think that the 17-Bit disk you mention must be one from the 17-Bit PD library in Wakefield. The sounds on these demos are created by taking an electronic 'snapshot' of the original sound known as digital sampling. The Amiga has a well-specified sound chip that can use these samples and manipulate the pitch and duration of them to sound as if it had a full band or orchestra inside it.



• Use pre-sampled PD sounds with Sonix on the Amiga to get stunning effects.

You don't need MIDI (Musical Instrument Digital Interface) to create music like that. There is a program called *Sonix* from Aegis that will give good results from the internal sound chip and many of the 'jukebox' demos are done using *Sonix*. Many of the PD libraries have disks of sampled sounds ready to be imported into a program like *Sonix*, or you can buy a sampler and make your own.

MIDI is the protocol which allows musical instruments, computers, drum machines and sound modules to talk to each other. If you wish to use MIDI on the Amiga, you'll need to get an interface because the Amiga doesn't have one. The MIDI which you have noticed in *Deluxe Music* is an option to send MIDI signals to a MIDI interface – but only if there's one fitted.

As an example, if you'd recorded *Toccata and Fugue in D minor* using the staves in *Deluxe Music* and weren't happy with the internal 'organish' sound available on the Amiga, you could direct the music to be sent as MIDI data to the interface. If you attached a tone module or synthesiser capable of sounding like a pipe organ onto the interface, you could get a more realistic sound.

There are many MIDI programs for the Amiga, from the basic MIDI driver contained in *Deluxe Music* to a fully-featured recording studio on a disk with sequencing, editing and all the ability to 'drive' up to 32 different instruments at the same time.

A good reliable MIDI interface and MIDI software are available from Datel (0782 744707) and, if something like *Sonix* isn't enough for you, you could combine it with your *Deluxe Music* program to give you the makings of a full blown Amiga music factory.

EXPRESS MAIL

Britain's liveliest computing forum – packed with comment, controversy and contempt. Write and tell us what you think. Reach us at: Express Mail, 30 Monmouth St., Bath BA1 2AP. Sorry, no personal replies, even with an sae. This week's replies written by Ian Pemble.

Getting into a Jem

In November 1989 I saw an advert for an Amiga A500, which cost £265 plus VAT from a company called Jem Computers.

I sent the £265 on November 27 1989, but I forgot to send the VAT. However when I rang Jem they said they would hold the cash – yes I sent cash! – until I sent the outstanding amount, and they would then send me an Amiga.

A few days later I rang Jem and cancelled my order because I had bought an Amiga from a friend.

It took several months before I finally did get anyone at Jem to promise me a cheque – which didn't turn up – and sometime later my girlfriend phoned them and was told they were in the process of moving office.

Eventually I saw their advert, with two different addresses, in your magazine. When I phoned this time, I spoke to a new manager – because the person I had spoken to before was no longer there. The new manager promised me a cheque (which didn't arrive) and later said they had no record of me sending them anything.

I have sent them a letter with photocopies of proof of sending £265 in cash and the Post Office have proof that Jem signed for it! It looks like the only way to settle this matter is in a court room, but any advice from you would be gratefully received – and could you please give me their new address?

Robert Hart, Roehampton, London SW15

If the people you refer to are Jem European Computer Services, then we have never actually carried one of their advertisements – although one of our sister magazines has. But at least we can tell you what has happened to them. Unfortunately the company is now in the hands of an accountant, and a creditors' meeting was held about a month ago.

However all may not yet be lost. We suggest you tell your story to the accountancy firm involved and see if you can at least get some of your money back. Write to: Coyne, Butterworth and Chalmers, 41A Easton Square, Portland, Dorset DT5 BY1 – and good luck.

Mid-summer madness

With reference to Andrew Brown's remarks on Olivetti's new direction, it is plain what Olivetti would like:- A Unix machine faster than IBM's, half the price of IBM's, capable of emulating a PC 386 speed and of running Archimedes high spec software 10 times faster.

Enter not one but two ARM processors running 48MHz in a new Acorn developed, Olivetti badged machine. Wait until September!

Madness and reading *Express* hand in hand.

David Jewson, Loughborough, Leicestershire.

We ain't holdin' our breath.

PD Pirates?

I have read with great interest your crusade against pirates in the past few months. I was wondering, since you now have a regular public domain column, can we expect the same vigour in exposing PD companies? I say 'companies' as they are no longer hobbyists but people making a nice living thank you very much.

If PD is supposed to be free, how can Kingsway Computers (that really sounds like a back room hobbyist!) advertise in your magazine with prices like £3.50 for PCs, £2.95 for C64s, £3.00 for Amigas and £4.99 for Macs? (Incidentally, Mac owners must be richer or more stupid than the rest of us because it seems they are being taken for a bigger ride.)

Another of your adverts has Advantage advertising nine PD disks for £21.95. This has be the biggest rip-off going, because the same people advertise blank disks for 50p each – compared to 39p each elsewhere – making the value of the disks in the nine-pack £4.50 and their profit £17.45. And this is supposed to be free software!?!

They even charge £16.95 for a year's group membership so we can get (free) software even cheaper. Very nice of them.

Please don't give me any of this, "But someone has to pay for their full page adverts". You know as well as I do that they could easily take out a 25 word free ad in *Express*.

Despite the fact that some of the games and demos available now clearly state that the product should be distributed freely, public domain is rapidly becoming business domain.

Finally, could I ask that you do something about this rip-off? Like not accepting adverts from PD libraries charging more than 70p a disk – or do you think that the above prices are justified?

Jeff, North Shields, Tyne & Wear

Six reasons why we don't agree:

1) Pirates break the law, PD libraries don't – so we will not be crusading against PD libraries.

2) PD libraries offer a service. They provide a central source for PD software, which saves you having to write to, or phone, individual hobbyists all over the country. So why shouldn't they make a small charge for their services? They may be breaking the letter of ➤

Bargaining a hard drive

Well done to David French (*Express* 82) for sticking up for us Commodore hard disk users. I put together a digitised picture demo last weekend which amounted to nearly three megs before it was edited down and compressed – God knows how long it would have taken to manipulate with only one floppy.

By the way, where did you get your price of £574 for the A590 hard drive? The standard price point seems to be £399.99 and it is regularly advertised at £369.99 or lower. When I bought mine from (the excellent) Diamond Computers I was charged £459 – with two megs of RAM installed and ready to go.

Martin Spencer, Worthing, West Sussex

I agree with Mr. French and wonder if your reviewer has the same A590 as the rest of us? My model cost £364 – well cheaper than any alternative – and accesses data at a more than adequate speed. Stunning compared to floppy drives.

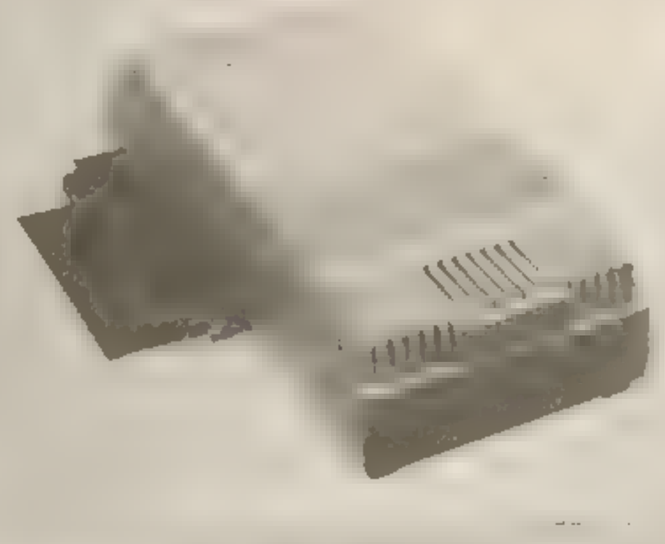
This is not to mention a built-in SCSI interface, 2Mb chip sockets, official Commodore/Granada repair support and an elegance of appearance that makes other drives look distinctly ugly.

Jim Blackler, Lancaster.

And to think, the aesthetic appearance of such hard drives had thus far passed us by.

Our noble scribe was reporting on the price of the A590 as recommended by official sources, not the kind of special offer intelligent readers of Shopping Express can achieve.

However we do take your point about implying it is expensive and slow. If your only alternative is a floppy drive, then the A590 is jolly spiffing. Us comparing it to hard drives for other formats is quite irrelevant if the only computer you've ever used is a Commodore. On the other hand, people who have used more than one computer and/or drive might find it useful.



• The aesthetically lovely A590 hard disk.

THE ATARI ABC

Now, there's a PC-AT compatible that not only solves problems like other AT compatibles, it also solves the one problem that its predecessors have created ... affordability.

Silica Systems are pleased to present the new Atari ABC. The ABC is a 286 AT compatible that runs at over 5 times the performance of the IBM XT. This is achieved by combining the power and speed of a 16-bit 286 processor, with Atari Corp's development experience and engineering capabilities, which use the very latest in design technology. However, the Atari ABC's are available at 'XT prices' and many XT owners will wonder why they paid more, but got less!

The ABC is a reliable, high performance computer, built to exceptionally rigorous standards. It is well designed, to a state of the art specification, maintaining maximum expansion capability for the future. This includes up to 4Mb of RAM and 3 AT expansion slots. Plus, unusually for a PC at this price, the ABC has the ability to install two or three extra drives, with the cabling already inside the CPU.

The ABC has a host of impressive features, all built-in as standard, encouraging simple installation and ease of use. In addition, the ABC's small footprint and quiet operating, mean that you will notice it less on your desk than other PC's. Except, of course, when you begin to take advantage of its AT power.

At its remarkably low price point, the ABC is ideally suited for home, office and educational use and will take full advantage of the vast range of PC compatible software. And, with 12 months FREE on-site maintenance (8 hour response), you can rest assured that your ABC will be fully supported.

The ABC is the latest addition to a comprehensive range of both 286 (8Mhz or 12Mhz) and 386 (16Mhz and 20Mhz) PC's, from the Business Systems Division of Atari Corp. Atari's PC range offers an unsurpassed combination of reliability, compatibility and expandability, with unique features like Atari's 44Mb removable hard disk on their PC4. Return the coupon NOW for further details of the complete range of PC products from Atari's Business Systems Division.

ABC TURBO
AVAILABLE: JUNE 90

To put the ABC even further ahead of the competition, we have introduced a special 'Turbo' version, which includes a super fast RLL hard disk controller to increase the data transfer rate from 150KBytes/s to 800KBytes/s, with a performance index of 4.801. Plus! to provide exceptional graphics with an outstanding colour resolution up to 1024x768, we have included a Super VGA graphics adaptor and a 14" VGA colour monitor (which also supports 1024x768 resolution), for an additional price of only £300. Check the ABC Turbo against the competition, at only £1299 (+VAT) with 30Mb hard disk, Super VGA colour graphics capabilities, plus 12 months on-site maintenance, it offers unbeatable value.

LOW PRICE - HIGH SPEC!

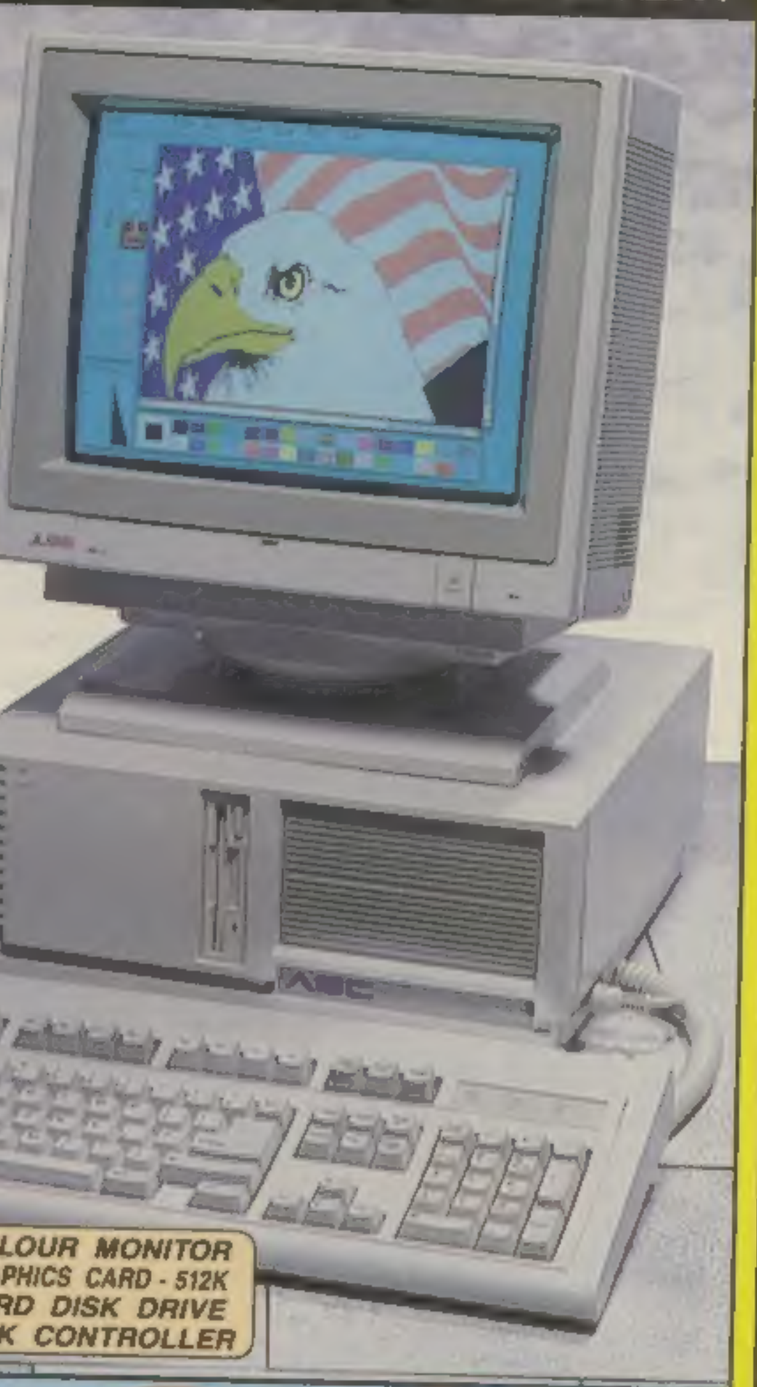
CPU+MOTHERBOARD	• 8Mhz 80286 16-bit CPU • Landmark Speed = 10.3Mhz, Norton SI Test = 9.0 • Latest NEAT (New Enhanced AT) technology chip set • Has user selectable bus, DMA speeds & wait states • Programmable to operate at 0 or 1 wait states • 640K RAM base memory (expandable) • Motherboard expandable to 4Mb RAM memory • Real time clock with battery back-up • Full 16-bit data line capability • Socket for 80287-8 numeric Co-Processor • 3 16-bit AT expansion slots (max)
DISK	• 32Mb RLL hard disk - 150KBytes/s transfer - 60ms access • Fast disk controller - 800KBytes/s transfer - *Turbo version* • 1.44Mb built-in 3½" floppy disk drive • Space for two 5¼" and two 3½" drives (max)
I/O	• Parallel port built-in (25-pin Centronics) • Serial port built-in (9-pin RS-232) • Mouse controller port built-in (9-pin serial)
GRAPHICS	• Super VGA video graphics controller - *512K - Turbo vers* • Super VGA: 256 colours in 800x600 res - *Turbo vers* • EGA video graphics controller built-in • EGA: 16 colours available from a palette of 64 • EGA: 256K of dedicated Video RAM built-in • MDA, CGA and Hercules graphics controller built-in
PHYSICAL	• Low noise operation • Ergonomic small footprint (38cm x 41cm x 15cm) • Keyboard - 102 key enhanced AT (12 function keys) • Keyboard - has 2 position height adjusters
PLUS!	• Fully OS/2 compatible (requires 4Mb RAM) • Supports Industry Standard Networks • MS-DOS 3.3 with GW BASIC 3.22 • 12 Months FREE on-site maintenance included

286 AT

WITH 30Mb HARD DISK & EGA MONITOR - £899

FREE! - ON-SITE MAINTENANCE
FREE! - TECHNICAL SUPPORT HOTLINE
FREE! - TEST/BURN-IN BEFORE DESPATCH
FREE! - OVERNIGHT COURIER DELIVERY

£899 WITH +VAT
30Mb HARD DISK AND EGA MONITOR



ABC TURBO £1299 EXC VAT
- SVGA COLOUR MONITOR
- SVGA GRAPHICS CARD - 512K
- 30Mb HARD DISK DRIVE
- FAST DISK CONTROLLER

£899 +VAT= £1033.85

ATARI

	3½" FLOPPY DRIVE NO HARD DRIVE	3½" FLOPPY DRIVE + 30Mb HARD DRIVE
NO MONITOR	£599 +VAT = £688.85	£799 +VAT = £918.85
+ EGA MONO	£699 +VAT = £803.85	£899 +VAT = £1033.85
+ EGA COLOUR	£799 +VAT = £918.85	£999 +VAT = £1148.85
ABC TURBO AVAIL. JUNE 90 • 14" SVGA COLOUR MONITOR • SVGA GRAPHICS ADAPTOR • FAST DISK CONTROLLER	£1099 +VAT = £1263.85	£1299 +VAT = £1493.85

SILICA SYSTEMS OFFER YOU

- **ON-SITE MAINTENANCE (8 hour response):** Available Free of Charge on all ABC's.
- **TECHNICAL SUPPORT HELPLINE:** Team of Atari technical experts at your service.
- **100% QUALITY CONTROL:** Every ABC is tested/burnt-in before despatch.
- **FREE OVERNIGHT COURIER DELIVERY:** On all hardware orders shipped in the UK.
- **ESTABLISHED 12 YEARS:** Proven track record in professional computer sales.
- **£13M TURNOVER (with 60 staff):** Solid and reliable with maintained growth.
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- **PRICE MATCH:** We normally match competitors on a "Same product - Same price" basis.
- **SHOWROOMS:** Demonstration and training facilities at our London & Sidcup branches.
- **THE FULL STOCK RANGE:** All of your Atari PC requirements from one supplier.
- **FREE CATALOGUES:** Will be mailed to you with offers and software/peripheral details.
- **PAYMENT:** Cash / cheque / credit card / credit - we are licensed credit brokers - details on request.

Before you decide when to buy your new Atari ABC, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after buying your ABC, when you may require additional peripherals or software, or help and advice with your new purchase. And, will the company you buy from contact you with details of new ABC products? At Silica Systems, we ensure that you will have nothing to worry about. Silica Systems is a new division of Silica Shop, the UK's leading Atari specialists. This new division has been established to provide a service to the more serious home user, as well as to business and education purchasers. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now, for our latest Free literature and begin to experience the "Silica Systems Service".

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Address: .....

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..... Postcode: .....

Tel (Home): ..... Tel (Work): .....

Company Name: .....

Which computer(s), if any, do you own? .....

E&OE - Advertised prices and specifications may change - please return the coupon for the latest information

the law as far as PD is concerned, but not the spirit – in terms of availability.

3) Are you sure the examples you chose are not shareware rather than PD? Many libraries offer both.

4) It would be impossible to list any products in a 25 word free advertisement, so display advertising is the obvious answer. Besides we don't take ads from companies in the Reader Ads.

5) As long as the paid-for ads are legal, decent, honest and truthful, we will continue to accept them.

6) If you think the prices charged are too high, exercise your right *not* to buy – it really is that simple.

Amusing music

I was amused by Jon Bates' article (*Express* 81) on how to "actually create music". I look forward to seeing his article on how to use your word processor to write a novel:

"It's best to start by laying down a pattern of punctuation to guide you. I generally put down about a paragraph's worth of full stops and commas and then repeat this. Next, build up a store of adjectives. Don't worry if you've no idea about plot or characters yet – you can add that later ... "

Seriously, Jon Bates' formulae are fine if you are happy with some sort of rhythmic trash, but that's all. To create music you need ideas, not formulae. A musician starts off with a melodic or harmonic idea and then works out an appropriate setting. Only the dreariest hack would ever start off with a drum track.

It all goes to show what I have long maintained, that the computer music field is made up mostly of two sorts of people: musicians, who admit they know nothing about computers, and computer experts, who refuse to admit they know nothing about music.

Roger Musson, Edinburgh

Jon Bates was actually suggesting a method that would get even the most inexperienced music maker started, without the risk of a musical 'writer's block'.

As for your letter, if we were amused by it – Batesy was close to hysteria. Here is a brief resumé of his career:

He has played piano since he was five and has numerous letters after his name: LTCL Piano from Trinity College, London, and a degree in music from Birmingham University.

He spent six years on the road with various rock bands and never played anything more electronic than a Hammond. He later became the music co-ordinator at an art centre in Oslo, has done a lot of session work and still lectures on music.

He plays the piano, live and with not a computer in sight, on Central TV every week; insists he knows nothing about the innards of a computer – and has never written a program in his life.

However, Jon did suggest that your method of novel writing might well be the secret behind the success of a certain well known publisher of romantic fiction.

Some difference

May I comment on your reply to the letter from S J Carcas of Chippenham entitled "Which machine should I buy for my Open University Course?"

The Open University offers an increasing number of courses in the Home Computing Programme that require students to have access to a suitable microcomputer. These are simply computer appreciation courses, they use the computer as one facet of a multi-media approach to teaching.

While the Amstrad PC1512 and PC 1640 meet the current undergraduate microcomputer specification, no courses are based around the use of these machines alone. They are but two of many models from numerous manufacturers that meet the specification and have been available, along with other models from different manufacturers, in the purchase schemes the University has negotiated.

Dianne Sutton, The Open University.

For a more comprehensive list of suitable computers, contact Dianne Sutton, User Services Officer, Academic Computing Service, Open University, Walton Hall, Milton Keynes MK7 6AA.

NEXT WEEK

SIMULATING SPECIAL
An issue dedicated to the art of simulating...

PLANES
The latest flight sims top the realism stakes

SOCCER
When the World Cup game finally finishes, carry on with your computer

TENNIS
Take on John McEnroe in your front room

PLUS

Columns for your machine, all the regulars and the most up to date news

Win Secretary Bird for your PC

Just the Word

PC owners get another chance to set off on a word searching mission again this week, with a dozen copies of The Software Toolworks/Mindscape's *The Secretary Bird* on offer to the lucky winners.

The Secretary Bird is an easy-to-use integrated package offering word processing, spreadsheet and database functions running under a manager which offers a pull-down menu interface that can be bypassed via short-cut key combinations.

The Writer module can edit documents as large as available memory allows and has a simple spelling checker plus mail merge and macro recording functions. The Calc module can also handle spreadsheets as large as available memory permits, provided they do not exceed 2,048 rows by 255 columns, and supports over 35 functions, while Filer offers the ability to create databases with fields which will only allow appropriate – text, numeric, monetary and so on – data to be entered.

The Secretary Bird was received enthusiastically by our sister title *PC Plus* and received maximum marks for value and ease of use. The package costs £39.95 plus VAT, but you can win a copy for the price of a postage stamp by answering one simple question correctly.

Somewhere in this issue of *Express* – either in the editorial or in an advertisement – is the phrase MURRUMBIDGEE-OYSTER (a raw egg taken with vinegar, it seems). Find the phrase, then fill in the number of the page it appears on in the space provided on the answer form.

Fill in your name and address and send your entry to *Secretary Bird* Competition, *New Computer Express*, 30 Monmouth Street, Bath BA1 2AP, to arrive not later than Monday June 25.

The first 12 correct entries out of the hat will be the winners, and the editor's decision is final.

WINNERS!

Bar a few bright sparks who were optimistic enough to think that we would give out prizes for finding the word 'textile' in the competition itself (try harder next time!), everyone spotted that Data Protection Registrar Eric Howe once worked in that industry.

The first ten out of the bag were:
R Adam, Dorking, Surrey;
S Harrington, Halifax, W Yorks; **Dave Eyre**, Bristol, Avon; **M Brailsford**, Glenrothes, Fife; **J Pointon-Bell**, Cowbridge, South Glamorgan; **R Martin**, Stoneleigh, Surrey; **T Cooke**, Doncaster, S Yorks; **Mannu Gilani**, Mitcham, Surrey; **George Falloon**, Exeter, Devon; **N Shortell**, Benfleet, Essex.

A splendid Naksha serial mouse will be squeaking its way to each of you very soon indeed.

• The editor has given himself a good beating up for not noticing that there should have been 12 winners not 10 in the previous competition. The readers who will be surprised to receive a Naksha mouse for their Amiga, ST or Amstrad PC as applicable are **Alan Colson** of New Oscott in Birmingham and **John Davis** of Salisbury, Wilts.

NAME .....

ADDRESS .....

.....

.....

The page containing the phrase MURRUMBIDGEE-OYSTER IS .....

★ POCKET SIZED ★ PC-COMPATIBLE ★ PERSONAL ORGANISER ★

ATARI Portfolio

THE PC IN YOUR POCKET

The new Portfolio from Atari is the world's first pocket-sized electronic organiser that is also a powerful PC compatible computer, with a full QWERTY keyboard and scrolling 80×25 character display.

Portfolio includes everything you would expect from an electronic organiser - an address and telephone book, time manager, diary and sophisticated calculator.

Portfolio also includes several functions that you would not expect - a spreadsheet for your personal budget and expense records, as well as a text processor for typing memos and letters.

And, because Atari's Portfolio is PC compatible, it can communicate with your desktop PC at home, or in the office. You can transfer files from one to the other, to enable you to update your reports and figures with the Portfolio while you are on the move.

FOR ONLY **£249** INC VAT

SPECIFICATION

- ★ *Processor:* Intel 80C88 at 4.9152Mhz.
- ★ *Operating System:* Compatible with MS-DOS 2.11.
- ★ *Internal ROM:* 256K containing BIOS, operating system and applications suite.
- ★ *RAM:* 128K with an internal RAM disk, configurable from 8K. Externally expandable to 640K RAM.
- ★ *Keyboard:* 63 keys, QWERTY, IBM PC BIOS compatible. Buried numeric pad and function keys. Optional key click.
- ★ *Character Set:* Extended IBM ASCII (255 characters).
- ★ *Mass storage:* credit card sized memory cards (32K or 64K or 128K RAM).
- ★ *Display:* Graphics LCD, supertwist technology, MDA compatible, 40 columns x 8 lines, 240 x 64 pixels (with the option to window a full 80 x 25 character display). Keyboard controlled contrast.
- ★ *Peripherals:* 60 pin expansion BUS to take serial and parallel ports and memory expansion units.
- ★ *Size:* 8" x 4" x 1" (200mm x 105mm x 29mm).
- ★ *Weight:* 495 grammes (with batteries).
- ★ *Applications:* calendar and diary, address and phone book, Lotus 1-2-3 compatible spreadsheet, text processor, communications software.

COMING SOON!

In addition to the excellent software built-in to the Portfolio Free of Charge (see right), other software and peripheral products, such as the sophisticated Pocket Finance package and serial/centronics interfaces are available. And it doesn't stop there. Many manufacturers have recognised the potential of the Portfolio and have already started to design new peripherals and software. Products currently under development include: Serial interface with built in mini modem, Apple Macintosh interface, business, utility and programming software plus a range of adventure and battle strategy games. For further free details on the Portfolio range, fill in the coupon below and return it to Silica Systems now.

5 BUILT-IN APPLICATIONS TO GET YOU ORGANISED!

To get you started, Portfolio comes with a suite of five useful functions built-in, all accessible from a simple menu display.

TIME MANAGER

More than just an electronic diary, the Portfolio Time Manager enables you to plan your appointments via a comprehensive calendar and diary. It can even be programmed to sound an audible alarm at specific times to remind you of important appointments.

CALCULATOR

Your Portfolio will be invaluable in the office or at home as a powerful pocket calculator. It has a full range of functions, including factorial, power and root calculations, with multi display formats and memories.

ADDRESS BOOK & DIALLER

Portfolio has a complete address book facility that allows you to store hundreds of addresses and phone numbers. And, at the touch of a button, you can retrieve any one of them, or search for a specific grouping, such as "all Italian restaurants". And, when you are ready to book your table, hold your Portfolio to your telephone mouthpiece and use the special built-in tone dialler to dial the number for you.

TEXT PROCESSOR

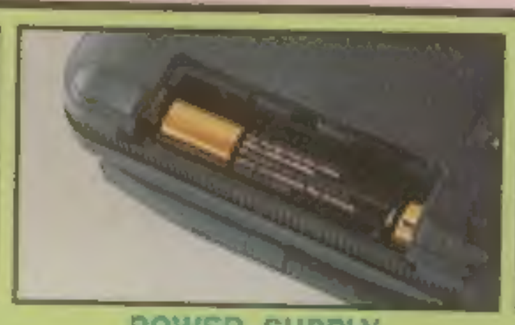
The Portfolio's built-in text processor program includes word wrap, line and column count, string search, in fact most of the functions you would find in a word processor. It handles printer and word processor control codes and allows easy transfer of files between Portfolio and your desktop PC.

SPREADSHEET

For real calculating power, Portfolio has a Lotus 1-2-3 compatible spreadsheet built-in. It has 127 columns x 225 rows and reads/writes Lotus V1.0 and V2.0 files, so you can transfer data to and from Lotus 1-2-3 on your desktop PC. The Portfolio's 256K ROM includes MS-DOS and PC BIOS compatible systems software.

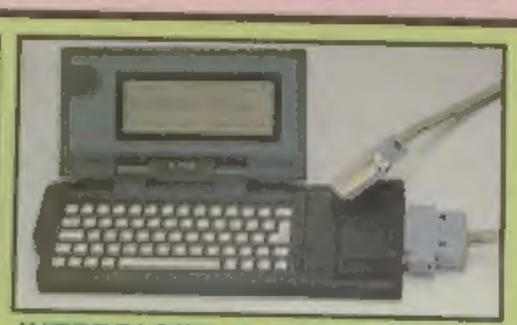
MEMORY CARDS

Portfolio can store and retrieve data and programs from its own RAM, or from small credit card size memory cards, that slot into its built-in card drive. The cards are available in three sizes, 32K, 64K and 128K, so you can carry a library of data in your pocket. The card drive also accepts ROM cards, which can contain commercial or custom software.



POWER SUPPLY

Portfolio is powered by three AA batteries which will run for up to six weeks with normal use, or from the mains using an adaptor. All the peripherals take their power from the Portfolio, so no extra batteries or adaptors are required. A 'battery-low' warning and memory back-up ensure that information is not lost when the batteries are changed.



INTERFACES & PERIPHERALS

Portfolio can communicate with other computers and supports a growing range of peripherals via a built-in 60 pin bus connector. Peripherals available include serial and parallel interfaces and memory expanders (to 640K). You can also add a card drive to your desktop PC, to enable it to read/write to Portfolio's cards.

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- ***FREE OVERNIGHT COURIER DELIVERY:*** On all hardware orders shipped in the UK.
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- ***CREDIT PAYMENT TERMS:*** Silica are licensed credit brokers - details on request.

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Which computer(s), if any, do you own? .....

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KICK OFF 2

BLISTERING PACE – PIXEL PERFECT PASSING – SUPERB TACTICAL GAME PLAY

KICK OFF 2 greatly enhances the game play of KICK OFF, winner of THE GAME OF THE YEAR award in U.K. and similar awards right across Europe. A host of new features have been added to the ones that enthralled the players the world over.

Full size multi directional scrolling pitch with the players, markings etc. in correct proportion.

1 to 4 players (Amiga & ST only) option.

2 players TEAM option against the computer or 2 other players.

Hundreds of players, each with ■ unique combination of attributes (Stamina-Pace etc.) and skills (Passing, Shooting and Tackling etc.)

Instinctive Kick Off joystick controls to dribble, pass, shoot, head or chip a ball and do sliding tackles or scissor kicks.

After Touch controls to bend or dip the ball.

Set Piece Free kicks including dummies to chip the ball or bend the ball round ■ defensive wall.

9 types of corner kicks with full control of shot power. Long and short Throw In.

Team selection from a squad of 16 with substitution and choice of tactics.

League and Cup competitions with extra time, injury time and sudden death penalty shoot out.

Facility to view, edit and save the action replays and create Golden Shots disc.

Kit design – 6 styles and 32 colours. (Amiga & ST only)

Facility to load Player Manager teams for a single game or league game.

Load your own designed Tactics from Player Manager.

Red & Yellow cards, 16 different referees, Injury time and host of features to create the atmosphere for a game which is a real fun to play.

Special Events provision to load Data Discs or Cassettes for events like World Cup, European Cup etc...

Restricted features on IBM and 8 bit machines.

AMIGA & ST £19.95
IBM (AT & XT Turbo – CGA, EGA & VGA) £24.95
CBM 64 – SPECTRUM – AMSTRAD £9.95/£14.95
SAM COUPE – £10.99/£14.99

AMIGA SCREENSHOT'S

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